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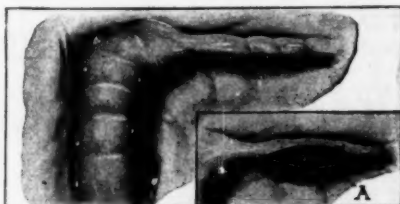
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Henry Ford

A Psychological Study

DALE M. KING, M.D.,

ATTENDING PHYSICIAN, THE GRACE HOSPITAL; CONSULTANT IN MENTAL DISEASES, WAYNE COUNTY ASYLUM,
Detroit, Mich.

Elbert Hubbard told the following:

A man sold peanuts.

He made money.

He added pop-corn.

He failed.

He was a peanut man.

You would not assume to judge correctly of the furnishings of a house by looking at the outside.

True, the general appearance would impress you favorably or unfavorably, yet, on the whole, you would not say that it contained rare old art treasures for it might, in fact, be vacant. So to know what any house contains you must have "inside" information—know what has been carried into it.

It is the same with man. You look at him and form some opinion regarding his character but are always ready to admit that, with casual inspection, you do not really know what lies beneath the roof and between the walls. Then there are those whom, by long and intimate acquaintance, you feel that you know pretty well, only to be astounded by a behavior that you did not anticipate.

In other words, it is absolutely impossible to measure accurately the true character of any individual, or to tell, within well defined limits, how that individual will react to certain influences. Sometimes we may judge correctly, but more often, perhaps, we are wrong.

The reason for this failure is due to the fact that we have not been in a position to find out all the house contains. Could we more closely approach the truth were we to devote sufficient time to a close study of the individual—know his inheritance, and the influences and training that were his from birth; undoubtedly our findings would be much nearer the truth. Let us see.

Two cells meet and grow as one; in it are inherited characteristics. It receives nourishment from the mother, but directs its own growth and development—there is some independent vital force that is sufficient unto its own needs.

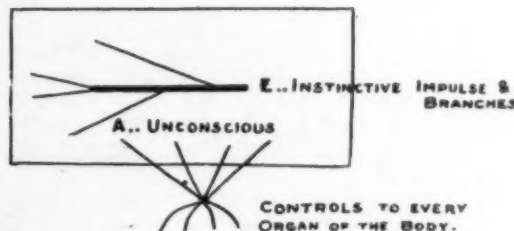
At birth this human form has a directing nervous force that acts as servant to its host—serves to promote its interests. It controls the heart and all the functions of the other organs—seeks to gratify the host in many ways.

These desires to properly accommodate the ego are branches of the *Instinctive Impulse*, and the dynamic force from which it springs, the *Unconscious*.

The unconscious exists from the time of conception and develops to meet the increasing duties forced upon it.

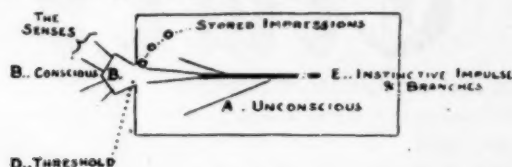
At birth it is like a photographic film taken from the dark-room and begins to receive impressions from the outside world. These impressions come through the different senses.

Before we proceed too far, let us picture what we already have. We will represent the Unconscious as an oblong, A, containing the Instinctive Impulse and its branches which have as their object the projection of the ego.



At birth, Consciousness, B, begins to develop and impressions are received that may be represented as circles, crosses, etc., depending upon the sense through which the impression is made. Early in life the threshold between the Conscious and Unconscious stands open and there is a free flow of impressions from the conscious to the unconscious to be stored away there as memories or knowledge, and likewise a flooding of the conscious by instinc-

tive impulses from the unconscious that are to please the ego. So our picture grows as below.



As we watch the infant grow, we note the universal tendency of the instinctive impulses to dominate its life—it exerts itself to obtain the things that please. Here it is necessary that training step in. We make corrections and, for the first time, conflicts arise between the instinctive impulses from the unconscious and the ethics of the conscious mind.

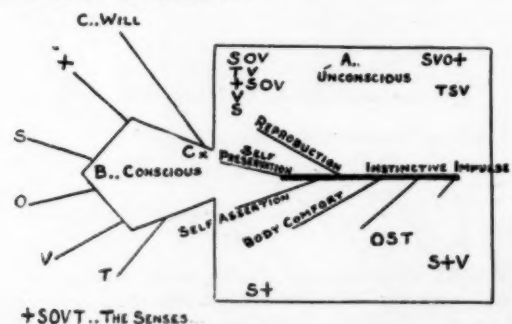
With this training and development of the conscious mind, or ethical self, another force must be called into existence—the Will. To the Will belongs the duty of guarding the threshold between the conscious and unconscious.

It originates in the conscious mind and is of it; originates there because, through training, the better self is exhibited and only through the exercise of the Will can this better self be maintained. The Will is born when the first appeal of the mother is made, "Don't do that," or, by some correcting act that gives the same impression—that it is wrong to satisfy some breach of the instinctive impulse. It is of the conscious because we know that when the conscious is off duty, as in sleep, the will, too, is off guard. Were it a part of the unconscious this would not be true. Therefore the will stands on the conscious side of the threshold.

Those who would locate the will in any other part than the conscious, or ethical and judicious mind, cannot reach deductions that are well founded.

They often make the mistake of calling a strong instinctive impulse, will power, whereas it is nothing but a strong desire, so strong, perhaps, that it over-rides the will. That it is stronger than the will does not make it the will any more than cutting a potato with a knife makes the knife a potato.

Thus we see that our scheme of the ego grows as we advance. We now have the unconscious with its instinctive impulse plus the impressions that have been received through the conscious; the conscious, and the will that stands guard between them. The following diagram will represent the psychic life of every individual; the mechanism is always the same. We differ only in what it contains and how it functions:



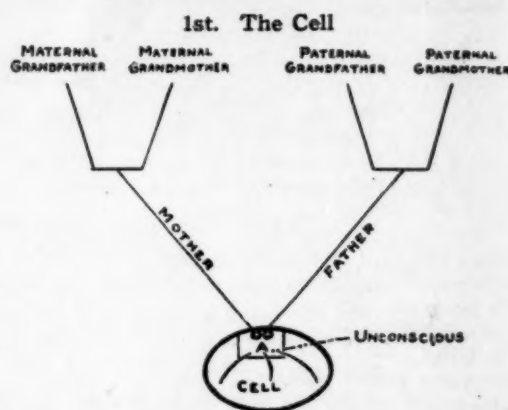
A, the unconscious, contains the instinctive impulse with its branches, self preservation, self assertion, reproduction, body comfort, etc., and the impressions that come through the conscious, x, s, t, o, v.

B, the conscious, holds the will and through consciousness the different senses operate.

The Ego

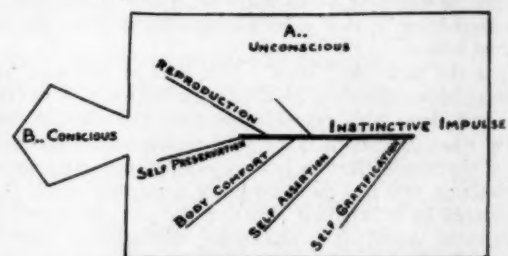
This, then, is our conception of the ego:

- 1st. The inherited qualities contained in the cell plasma.
- 2nd. The Instinctive Impulse with its branches.
- 3rd. The different senses (seeing, hearing, smelling, tasting, feeling), through which the different impressions are received. They develop the unconscious and ripen conscious judgment.
- 4th. The Will that stands guard between the conscious and unconscious.
- 5th. The emotions (love, fear, hate), which are reactions of conflicts with some branch of the instinctive impulse.
- 6th. Memory and Imagination are the products of conscious selection and association of impressions stored away in the unconscious, and bear a relation to branches of the Instinctive impulse and their reactions, the emotions.
- 7th. Behavior is the reaction of the whole ego to certain stimuli. Through behavior we judge the individual.



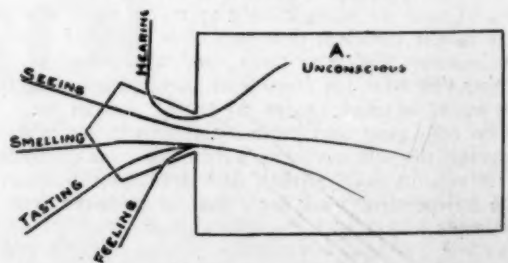
INHERITED QUALITIES CONTAINED IN THE CELL

- 2nd. The Instinctive Impulse, and Its Branches**



The Instinctive Impulse has as its object service to, and gratification of, the Ego.—Self-preservation and advancement. It has many branches: to furnish nourish-

- ### 3rd. The Different Senses

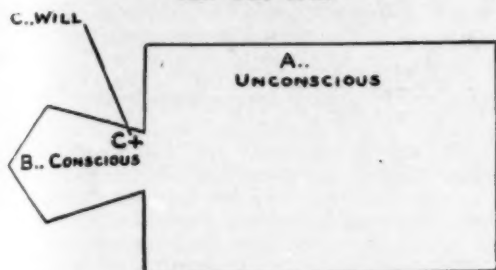


ment, to perpetuate itself, to procure body comfort, to attain personal advancement, etc.

Love, fear and hate have been termed instinctive impulses, but they are not; they are emotional reactions to conscious treatment of some branch, or branches, of the Instinctive Impulse.

Through the senses, different impressions are received that may, or may not, be associated. You hear an apple drop from the tree. It feels smooth, has color, swells sweet, tastes sour. These impressions are received and stored away in the unconscious.

4th. The Will

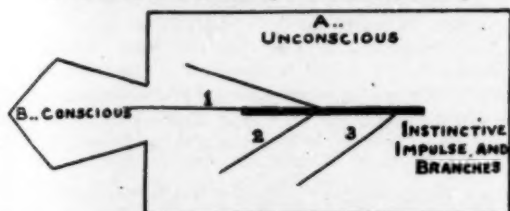


The Will stands in the conscious as a guard between it and the unconscious.

Appeals of the conscious, or trained mind, are made to the Will to repress certain instinctive desires that would disturb the poise of the ego. It likewise guards the unconscious from certain impressions received through the senses that the conscious mind feels should not be retained.

The Will is subject to training and development, and upon its exercise of duty depends behavior.

5th. The Emotions (Love, Fear, Hate)

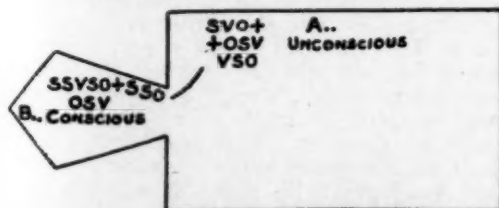


Love results from a conscious gratification of one, or more, instinctive desire—say, 1, 2 and 3 are assisted in expression. The mother feeds, comforts and encourages the child. Love is the response.

Fear results from a blocking of self-assertion. It is a consciousness of some force that may block moral, physical, social, or financial advancement. The doubt of success is fear.

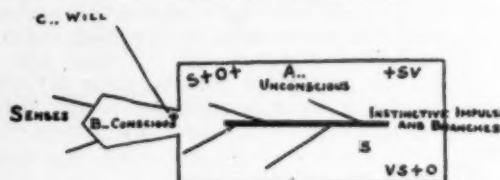
Hate is an emotion akin to fear, and is often associated with it. We are inclined to hate those who block one, or more, of our instinctive desires.

6th. Memory and Imagination



Memory and Imagination are recalls to consciousness of stored impressions from the unconscious—a back-flow of impressions through association of ideas, and depend upon habit, vividness, recency and emotional response.

7th. Behavior—Character



Behavior is the reaction of the individual to certain stimuli and depends upon the entire psychic mechanism.

Suppose, for instance, you are camping in the north woods. A forest fire arouses you during the night.

You know directions, and, from the approach of the flames, you recognize that the body of water on which you are camped is too small to afford protection.

An avenue of escape lies through a burnt slashing to another lake. It is a question of quick action.

There are some in your party who would be a handicap to speed; in fact one of them may be so disabled, through sickness or accident, as not to be able to travel at all.

Your behavior will depend upon many things; there is the instinctive desire for self-preservation; there are the accumulated impressions of all that relate to forest fires, stimulated to recall by the different senses; the emotion fear is strong and, if you are warmly attached to any member of the party, love plays a part; the imagination pictures many possibilities and it is eventually up to the will to decide your actions, or behavior.

It may be that the instinctive desire for self-preservation is so strong that it over-rides all else, and safety is sought in flight. On the other hand you may direct the others to safety, take the invalid and support him waist-deep in the lake and cover yourselves with wet blankets—do the right thing regardless of consequences. Yet one might not know of this method of meeting such an emergency, so knowledge is an important factor in all behavior reactions. Above all, though, stands the will.

"Why Who Is Who"

We must admit that instinctive desires, at birth, are the same in all human beings and are modified, as the individual advances, by environment and training.

If this be true, we at once acknowledge the importance of environment and training, and become more generous in our judgment of him who does not believe as we do.

What a man is depends mostly upon his training and surroundings at a period of life over which he has no control.

This applies to the fundamentals, for other factors creep in over which no one has control, which determine character—we may call this fate.

Say twin boys are born; they receive exactly the same care and training, yet one develops measles and the other escapes—quite a different experience that was not anticipated.

To go further: They start off together along the same dusty road; both are bare-footed. One stubs his toe on a stone, stops to pick it up, sees a cow in the adjoining field and throws the stone at it—another follows and then another.

By this time the brother may be well down the road. (Had he lingered the outcome might have been different.) Just then two boys come along toting a shotgun. They ask him to go along. It is his desire to do so—it would give him pleasure. His conscious mind tells him that he should continue on to school, and the will is called upon to exert itself in favor of correct action.

For some reason it is not strong enough, and the desire wins. He hides his books and joins them. They kill a farmer's chicken. They are chased and he is caught and thrashed.

You may carry the sequence of events as far as you like but it does not take you long to see that the two boys, who have had the same inheritance and training, are storing away quite different impressions.

One knows the most about measles, while the other has some advanced learning on playing truant, killing chickens, the excitement of the chased, the pain of chastisement, the problem of the lie, and other impressions that last through life.

His early training may have been such that he told the truth, took his punishment, and made up his mind that the next time he stubbed his toe, he would hobble right on to school—or it may have been different.

We should now be able to understand, with tolerance and charity, the different religious beliefs, different political affiliations, different economic views; in fact, no one individual can lay the correct path for another to follow. Only when we have reached this point may we be deemed worthy the term, fair-minded.

With this conception, then, of the individual complex, let us proceed to the examination of one who has forced himself indelibly upon the pages of industrial history.

His Inheritance

Henry Ford has a good inheritance; his cell plasma was derived from the right kind of stock.

William Ford, his father, was an English boy, born in Ireland. He settled near Dearborn about 1847, when he was twenty years of age, and became a farmer.

We are told that he was industrious and frugal, honest and sincere, a warden in the village church—a good and respected citizen. He knew the value of a sharp axe; the advantage of a keen cradle blade—land was to be cleared, fences built, grain cut. The days were long in summer and each hour was filled with toil that was slow in showing real achievement. It took a courageous and tenacious spirit to hold for the delayed reward. The eight-hour-day and minimum wage were unknown—to the task belonged all available time.

True, he was "master of his own soul" and could have sat beneath the shade of an oak that had been marked for fence rails. This he did not do; the oak went down and the fence went up. None other than a strong character could weather the hardships which those early days imposed.

Only a clean character could hold the respect of a community that was almost as intimate as a large family—bad traits could not be covered for long. So the term "good citizen," as handed down to us, covers a multitude of virtues. He lived to the age of seventy-nine.

Mary Litogot, his mother, was of Dutch descent, the daughter of a well-to-do farmer. She married William Ford, then thirty-five, when she was twenty-one years old and the following year Henry was born. She was devoted to her husband, to her children and to her household. We are told that her house was orderly and clean; that the heavy tasks of a housewife in those days were borne by her with courage and cheerfulness; that she was calm, well poised and judicious in her discipline. She died at the age of thirty-five leaving six children—three boys and three girls.

His Home Training

His father: William Ford worked; he believed in it. His eldest son, Henry, was made to feel his responsibility to life at an early age. His conscious mind was trained to meet duties, not to shirk them. Personal inclinations and instinctive impulses became subservient to a higher consciousness backed by a cultivated will.

The chances were that he had a peg upon which to hang his little coat and hat; that his shoes and stockings were orderly placed upon the bed; that in winter he had to get up at an appointed hour and dress in a cold room

without remonstrances; that, when he was old enough, he blackened his shoes Saturday night to be ready for church the next morning; that he had small chores to do that were appropriate to his age and strength, and that his reward was judicious but not flattering; that when he needed correction, as all boys do, it was made in all seriousness.

His father set an example that did not contradict his expectancy.

His mother: Mrs. William Ford was devoted to her husband. She supported his rule and assumed her responsibilities to her children as only a noble intelligent woman can. She encouraged and developed their self-assertion when it was needed, and at other times gently repressed it. Her duty was to balance the child's character. She taught Henry Ford that it was wrong to use tobacco, drink, or gamble. He never has.

Boyhood: When Henry Ford was a little past five years old he started to school. The Civil War had closed three years before, but there was an aftermath of impressions that must have been felt for a number of years. The horror of it all left mental pictures with Ford that had a vivid recall to consciousness during the World War.

Knowledge of these early boyhood impressions makes his attitude during the late war more comprehensible.

The main line of the Michigan Central runs through Dearborn and, as a boy, Ford was always interested in the locomotive that was able to pull such a tremendous load.

It was a stimulus to his boyish imagination, and may have been the touch-stone to the springs of his mechanical development.

He took watches and clocks apart and repaired them.

He, with other boys, built a dam on the little creek near his home; then a water-wheel was installed.

He walked two and one-half miles to school.

The school-master was of the old type that believed in discipline and a sound foundation in the three Rs.

The training and guidance of the home was carried on in the school. Application and mental effort were called for, and there was no compromise with laziness and indifference.

Henry Ford went to school winters, worked on his father's farm summers and, in addition, built a work shop in which he was able to give expression to the images of his imagination. At the age of seventeen he stopped school.

So he had stored away in his unconscious, impressions (by hearsay) of the Civil War, pictures of the locomotive and its mechanism, the power generated by a waterfall, the problems of the farm, the knowledge acquired during his school days, the construction of a watch, the memories of just and conscientious parents, and a strong instinctive desire for self-assertion along mechanical lines. His conscious mind had been developed to a high ethical sense by his parents and school-masters.

Located in that conscious mind was a will which was strong and healthy. That this is true was demonstrated early in his life. He heard the call of the city where the mechanical field was broad and fertile. He found employment as a mechanic at a wage that would not pay for his board and room. He made up the difference by working nights for a jeweler. After seven months he went with the manufacturers of marine engines, and was doing well and was happy in his work. It was then that his father asked him to return to the farm—he needed him.

Henry Ford did not hesitate. There must have been a conflict between his instinctive desire to gratify the ego through mechanical expression—his life's dream, and his conception of duty to his father. His early training and

teaching had developed a consciousness and will that were strong enough to overcome selfish motives. He returned to the farm. This very decision may have been the direct cause of his later success.

Suppose Ford had stayed in Detroit; his mind would have been uneasy—out of harmony, and the instinctive impulse to gratify the ego might have slowly drained off to no purpose and without results. As it was he went back to his father—made his will power, through the call of duty, suppress, for the time being, his hopes and dreams. It was like clamping the exhaust on a full head of steam. Energy was saved and stored. When he was able to return to his work later, it was with a powerful and smooth-running machine.

His Relation to the Farm

When Henry Ford returned to the farm his heart was not set on farming.

He drove a red cutter with a complement of sleigh-bells—one could see and hear him coming and going.

He danced well and was a fancy skater.

His suppressed ego must assert itself in some way.

He courted and won Clare Bryant.

In 1888 they were married and Ford built their home. As a farmer he cut standing timber and made it into lumber.

He built a tractor that wouldn't run and sawmills that would.

So there might be added to the impressions already stored away, the satisfaction of self-assertion—the red cutter, chiming bells, his dancing and skating. All gave expressions to his ego. Ford showed salesmanship at an early age; he "put himself over." There were also the favorable impressions made by another good woman—his wife.

To the influence of his mother and wife may be attributed his Peace Ship venture; they had always been sincere and trustworthy, so to him all women were.

More mechanical ideas were received and registered. The pleasure that he felt as a result of his success in self-assertion stimulated to renewed activity his great desire to assert himself along mechanical lines.

One night he told his wife that he was going to return to Detroit and build a horseless carriage.

Theirs was no debating society; Mrs. Ford had faith and confidence in her husband—gave him the only support he needed.

Ford returned to Detroit to devote himself to his life's dream. The pent up force held back by a strong will, through the call of duty, was given vent along better directed channels. He stuck and worked when others would have given up. At last he built a car that would run. Yet his troubles seemed only to have begun; horses would run too. In those early days he was more often cussed than discussed. Two companies were formed and both proved failures—Ford's training had been mechanical, not financial.

He built a racing car. It won its race and much advertising. The third company was formed. There were business men in the organization. It did not fail.

Ford rebuilt his racing car and did a mile in 39 4/5 seconds. More advertising, and it was world-wide. Yet we are told that Mr. Ford dreads notoriety. He must be miserable. Business was better than good. He established a minimum five-dollar wage. Whether this was a good or bad procedure may be argued by sociologists and economists. To Ford it brought increased production, more sales, and more advertising.

His Reaction to the World War

During the World War Ford showed his abhorrence for it by word and deed. His early impressions following

the Civil War were recalled to consciousness. To him war was all that Sherman said, plus. Ford had succeeded along mechanical lines and, under business direction, financially.

His ego had expanded enormously—everything most, was possible to him. He had looked failure in the face year after year and finally spit in his right eye. His attitude attracted pacifists—and others.

An Austrian woman, whose object was to obtain peace while her country and its allies could dictate the terms, came to Detroit to see Ford.

Countries of the old world do not send out second raters on such a mission.

Ford accepted what she told him as the truth. The two women, whom he had known well, always told the truth. Unconsciously they had lain the keel of his Peace Ship.

The Peace Ship sailed on December 4, 1915. We are told that the peace delegates almost at once started a miniature civil war.

Ford became ill—revelation is sometimes sickening. He picked up a few new impressions first-hand—the picture wasn't as rosy as painted.

He left the flock and was glad to see the Statue of Liberty New Year's Day.

But what could you expect?

By training and experience this was all new to him. Yet he thought he was right. Truly a "little knowledge is a dangerous thing," especially if backed by almost unlimited wealth. The few hundred thousands of dollars that he spent on the Peace Ship were not wasted—another world-wide advertisement.

Ford-Newberry Campaign

Most of us have read of the Ford-Newberry campaign. Ford is a Republican, but he ran for Senator on the Democratic ticket.

President Wilson said he needed him—or his vote.

During the political "ragging" Henry Ford grew peevish: "If a candidate has to go through this sort of thing to get into the Senate I don't want to go there." (Sarah T. Bushnell.) He didn't.

Taken from his industrial domicile, where he was autocratic, Ford changed from the "King Bee" to "Sallie over the ice," where one cake look no safer than another.

All great egotists are sensitive. They may be outwardly modest and unassuming, but inwardly the strings are taut and respond in high pitched notes to every adverse touch.

The Chicago *Tribune* struck a note in Ford that resounded in a million dollar libel suit.

On the stand Mr. Ford said that Benedict Arnold was a writer.

His friends state that he misunderstood the question.

Experienced men do not answer at half-cock while in the witness box.

He was either short on knowledge or judgment—perhaps both.

The Senatorial race payed well in advertising.

The Chicago *Tribune* libel suit held front pages.

Give a newsboy a bunch of papers with a Ford headline and he is happy; he has had them many times—supper will not be cold when he return empty-handed. He has shouted Ford and coal mines, iron mines, Muscle Shoals, timber lands, cotton fields, glass factories, railroads, synthetic milk, almost laborless farms, hospitalization of disabled soldiers—all subjects that appeal to the public imagination—a fabric of fact and fancy, alluring and illusionary.

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Pellagra

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The patient forming the basis for this report, a female, age thirty-nine, born in Russia, was admitted to the Philadelphia General Hospital, October 1922.

This patient has been demonstrated to the University of Pennsylvania students in the course on medical condition displaying cutaneous manifestations. It is considered worthy of report due to the following facts:

She displayed the three cardinal clinical features



Case No. 1—Illustrative case of Pellagra:—Note pigmentation of the hands, forearms, and the cravat distribution of pigmentation on the chest and about the neck.

usually referred to as "Three D's" (1) repeated attacks of diarrhea for a period of several years; (2) Dementia existing for two years; (3) Dermatitis with the characteristic pigmentation which recently developed.

Examination of her history during childhood and early adult life showed nothing of importance, except that she displayed periodic outbreaks of temper and persistent constipation. She developed normally and was married at the age of 18 years, since which time she has given birth to eleven children, all of whom were breast-fed, and three miscarriages. During the past 16 years she had every opportunity to take all types of foods. Reliable record as to what types of food she actually consumed was not obtained.

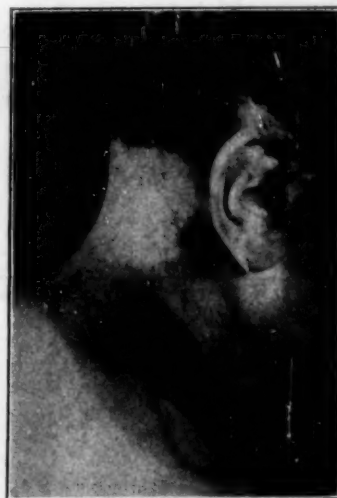
She suffered from some gastro-intestinal condition during much of her married life, and was finally taken to the Lankenau Hospital for appendectomy in 1920. Since operation the symptoms of Pellagra appear to have developed in intensity.

It was quite evident that during her married life she endured hardships, necessary in the rearing of her family. During nineteen years she nursed eleven

children and this together with the bearing of these children may serve in part to explain her blood impoverishment—hemoglobinemia and lymphocytosis.

When admitted to the hospital she was at first placed in the Psychopathic Department, and we learned from the ward notes that it was impossible to get her to take the necessary amount of food. She was greatly depressed, often confused and at times easily excited. Insomnia was an annoying symptom. Here may be the opportune place to mention that she had been previously treated in an institution for the insane, with a diagnosis of dementia. Upon several occasions she attempted suicide.

She was transferred to the Medical Service for observation October 26th, 1922 and here it was possible to observe practically all the previously cited mental symptoms. The additional features to which we would call special attention are those of the skin. There was present symmetrical brownish pigmentation of the hands and forearms, which is best described by the accompanying illustration (fig. 1). There was slight pigmentation at the corners of the mouth. The skin was rough, rather dry, and had lost its normal lifelike feel. There was beginning pigmentation about the neck and over the sternum



Case No. 3—Lateral and posterior view showing pigmentation of the neck, in Case No. 1.

which deepened during her stay in the Medical Department. This pigmentation took form of "Casal's Cravat" (figs. 2).

Upon entrance to the hospital the flow of saliva was abnormal and suggested salivation. This tendency to an excess of saliva persisted while under our care. There was present active pyorrhea, and in brief the mucus membrane of the mouth, and the

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Industrial Fatigue in Women

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If we take a careful inventory of our therapeutic resources for the treatment of disturbances of the nervous system due to fatigue, whether mental, physical, or both, we find that the principal remedy we have to offer is—rest. However, in the present state of our civilization, rest cannot be apportioned ad libitum, nor at stated intervals, nor in exact dosage. Nature, exacting a mistress as she is toward all who violate her mandates, offers us refreshment in wholesome sleep, far beyond that we have yet been able to acquire through any other means, and during which repair, readjustment and invigoration, prepare us for another day. The importance of rest, as affecting the potentiality of employees in industrial establishments, has been recognized for some time; so that the rest room is now an important adjunct, although its recuperative value is, probably, only physical. It is a long way between the farm hand who rests from his toil, and that of the factory, shop, or telephone girl who, in addition to physical and mental strain, often has to assume the burdens of home life as well and it is not an uncommon thing for neurologists to number among their patients many of this class, for whom the principal treatment indicated is physiological sleep. One of the chief factors affecting the economic phase of the subject, is the time lost by employees in industrial establishments from intercurrent conditions affecting the nervous system, due to fatigue and loss of sleep.

Investigation will ultimately show that women in industry represent the weakest link in the chain of circumstances which we are considering. At one time this would have been limited to stationary occupations, involving little or no strain upon the nervous system, and deleterious only, as far as sedentary labor, unhygienic posture or surroundings were concerned. The sweat shop is now largely a thing of the past, and hygienic conditions are now mandatory and subject to municipal, State, and Federal supervision!

The Personal Equation: What now confronts us, not only from an economic standpoint, but from an eugenic one as well, is the personal equation, which finds its prototype in the telephone operator and in a lesser degree in other vocations. I know of no occupation in which the fundamental substrata of the nervous mechanism are so readily exposed, the qualities of self restraint and mental equilibrium more invited, and the element of mental fatigue so forcibly brought into play, as that of the telephone operator. Here while there is some physical strain, even that of prolonged sitting has been modified by permitting the operators to stand occasionally. Indeed, the question of posture is now an integral portion of industrial medicine (American Posture League), although as properly held by Mary Anderson (1) in her admirable article, on the "Health Problems of Women in Industry," no complete seating "code" can be formulated with the data at hand. The crux of the situation is best described in the words of the Industrial Commission in a Special Bulletin issued by the Department of Labor of the State of New York (2). "The Telephone Company has tried to overcome the physical strain of continuous sitting by allowing the girls to stand at intervals. It has also tried to reduce the physical strain of stretching and reaching by limiting the size of the board which the girls operate. In a sense, these efforts have been successful. The liability of injury from shock, the harsh words and abuse from tele-

phone users, the intense strain due to the constant flashing of the lights by impatient subscribers, the sense of crowding when work accumulates, and the inevitable anxiety in seeking to make the necessary connection whenever a rush takes place, all combine to accentuate the strain of the work, and are all factors more or less absent in other callings in which women are engaged."

Even this expresses mildly the provocative effect upon the nervous system of the operator, and the artificial and unnatural conditions imposed. A subscriber who upon the public highway would not think of suddenly discontinuing a conversation and walking away, will abruptly hang up his receiver. In other instances, the joggling of the receiver, is a potential call upon both the sight and hearing of the operator. Adding to this the restrictions upon the operators to even retaliate against the often harsh remarks of impatient subscribers, we can readily see the vicious circle that is established, and its fatiguing effects on the delicately adjusted nervous mechanism of woman. While women, therefore, can be protected from the deleterious effects of long hours, unhygienic surroundings, and other harmful working conditions, we cannot eliminate or regulate the onslaught upon the nervous system in occupations where the personal equation cannot be eliminated. The subject is still statistically deficient, as the etiology of mental fatigue is often traceable to individual causes, not always depending on the character of the employment, and requiring investigation of the individual case, to be of value.

There is another class, more highly organized mentally, but much less regarded from the industrial viewpoint, requiring serious attention, and that is the school teachers. The importance of this can be understood, when we consider that the mental development and direction, as well as the supervision of children during the critical periods of puberty, menstruation, and adolescence, are subject to the psychological influence of the personal equation of school teachers. The weakest link in the chain of circumstances surrounding them is often the enforced political supervision, from which they should be divested before we can intelligently supervise them individually as industrial units, for such they are, being entrusted with the development of those who will later be industrial units themselves.

Conditions during employment, however, are by no means the only ones affecting the stability of the nervous system of women in industry. The question of length of hours, which will undoubtedly find its solution as the result of exhaustive investigations, better understanding between employer and employee, and legal supervision, is rapidly reaching a solution, which will eventually find itself in the intelligent apportionment of time. Likewise the payment of wages. Both of these factors, however, are very important, as affecting the general health of the employee, but not inseparable from conditions outside of employment, as affecting the nerve stability, or industrial potentiality of the employee, or the production of fatigue. Among these are (a) the contribution of family support by single women, (b) where the mother becomes a wage earner by reason of child support, (c) the high tension demands in recreations, (d) the exacting demands of modern dress, (e) prolonged courtships with their attendant indecisions and psychoneurotic demands, and the period of readjustment in which we are now living, as the result of the war. Let us briefly consider them separately:

(a) *The contribution of family support by unmarried women:* This combines vocational as well as domestic responsibilities, and lessens periods of rest and recreation.

(b) *Where the mother becomes a wage earner by reason of child support:* This is a very important problem, as yet quite unsolved and has been recently illuminated by A. Louise McIlroy (3), and while I am strongly in favor of retaining employment for the pregnant employee, sufficient restrictions should be imposed to discourage illegitimacy, which would undoubtedly increase if conditions antecedent to the pregnancy were not properly scrutinized. In addition, there are physical and developmental conditions which also contribute to the production of fatigue, such as menstrual disturbances, especially dysmenorrhea (often requiring the loss of one or two days, and lowering efficiency for several days more), and the demands upon the nervous system during adolescence.

(c) *The high tension demands of recreation:* These are now largely neutralizing the truism recently expressed by Reynold A. Spaeth (4) that: "The demand for shorter hours of labor has risen among the working classes, not so much from the conviction that their present hours are injurious to health—though that in many cases is the fact—not so much from the theory that shorter hours mean higher wages, though that theory is in the main sound—but from the strongly felt desire for additional opportunities for recreation and the enjoyment of life."

Although, at one time, the conditions of recreation were superior to the conditions surrounding the work, now improvements in industrial conditions are superior to those accompanying the recreation, and with all the home as accepted in its fundamental sense, is in many instances rapidly deteriorating to only a *domicile*. This is true not only from a social viewpoint, but illustrative of the reversal of conditions, which necessitate the consideration of the employee, in the relation of his occupation to that of outside conditions, from an entirely different angle than heretofore. Long and invigorating walks in the country so beneficial to body and mind, are now supplanted by the automobile, a more or less sedentary recreation, compared to the former. Games and other indoor diversions, require the additional stimulus of chance; dance, once the personification of melody and rhythm, is now supplanted by the well recognized abandon of the modern jazz; intellectual diversions, such as chess, are participated in by but very few, as being relegated to those beyond the pale of membership in modern diversions. This is not alluded to from the standpoint of moralizing, but to show the inequality of standards, between the occupational and recreational requirements of the main industrial unit—the employee.

(d) *The exacting demands of modern dress:* These are self evident, and do not require consideration here, only in so far as they are carried into the place of employment as well, are competitive, often encourage extravagance, and worthy of economic and industrial attention.

(e) *Prolonged courtships with their attendant indecisions and psychoneurotic demands:* This portion of the subject is of dual importance, as it affects two industrial units. If statistics were available, and they should be, it probably would be found that prolonged engagements between parties, both of whom are employed in industrial establishments, are chiefly due to indecisions on the part of one or both of them, as to the sufficiency of the financial status of the prospective husband. Taking into consideration the question of wages and length of working hours, the demands and expense of modern recreations, with their fatiguing influence, and the

mental effect of indecision and vacillation, the production of fatigue in both instances is self explanatory.

Dysmenorrhea: Unfortunately there are not available accurate statistics on any of the causes of illness among women alone, in industry. According to the nurses of some of the largest industries of Chicago employing many women, the girls frequently apply for remedies for a headache or to relieve pain incident to menstruation. The time lost for these two reasons cannot be calculated, but it amounts to thousands of hours during the year and leads in practically every instance to a lowering of efficiency and marked increase in fatigue. The headaches may be related to the social condition of the girl or may be associated with puberty. *From five to ten days each month girls are not up to grade physically on account of dysmenorrhea.*

Headache: Every headache during industrial hours has its equivalent in loss of time, decreased output, financial loss, decreased efficiency, and finally loss to the community at large. While there are several causes attributable to headache among employees in industrial establishments, such as unhygienic surroundings, eye strain (often corrected, but accentuated by fatigue), environmental (noises, fumes, dust, etc.), constipation, constitutional conditions, sinus infections, intranasal obstructions, etc., "fatigue headache" as pointed out by Cobb and Parmenter (6) is a very important factor. I have found this proportionately true, depending on the amount and prolongation of mental concentration required in the respective vocation.

Loss of Time: This varies from momentary fatigue to total absenteeism. As quoted by the medical department of the New England Telephone Co. (7) Dr. Richardson found in examining the Benefit Fund records of the New York Telephone Company from 1917 that there had been 361 cases of nervous disability, including neuralgia and neurasthenia. Among the employees of the company this was a rate of 55.8 per 1,000 employees per annum eligible for sickness disability. The rate for the total Bell System was 33.4 per 1,000. *"The need is very obvious for special study of fatigue in an INDUSTRY in which nervous tension is so omnipresent."* While this report is principally symptomatic, an analysis would probably show the underlying causes previously mentioned.

In discussing the question of absenteeism, it should be remembered that there are certain causes of absence which are mainly unavoidable, such as home duties, conditions of transportation, illness and inadequate rest and sleep. On the other hand, absence due to fatigue, prolonged hours, or insufficient wage incentive, could be prevented in a large part. This shows the importance of fatigue, as an integral factor affecting the economic aspect of the question, for when an employee is relieved of fatigue, and restored to efficiency, he again becomes an industrial unit.

Rest Periods: There is no arbitrary basis for calculating rest periods during employment. And here is where an important fallacy creeps in. *Cessation of labor alone does not establish ideal conditions for the prevention or relief of fatigue, especially that due to nervous strain, exhaustion, or loss of sleep. Relaxation and recuperative rest demand in addition definite periods of natural sleep, change of environment, and diversion, but principally the recuperative effect of physiological sleep.*

In the study of industrial absenteeism by Quinby (8) it appears that sickness and accident accounted for 41 per cent of the total time lost, while personal reasons were responsible for 59 per cent. The percentage of sickness and accident disability varied from 33 per cent to 66 per cent. Male employees lost on account of sickness and accident on an average of five days, whereas, female employees lost approximately eight and three-fourths days.

About the age of 45 the men showed a rapidly increasing morbidity rate, while the average amount of sickness among the females started to increase after the age of thirty.

Accidents from Fatigue: It is obvious that accidents are more prone to occur in the presence of fatigue, it having been shown by Guth (9) that accidents occur more frequently during the last working hours, and are also the more serious, thus affecting both efficiency and production.

Adolescence: This is one of the most important periods in the life of the industrial employee, as it is here that the dual responsibility of wage earning and self-discipline are combined. Antecedent physical defects should be investigated, and the family physician consulted. Endocrinology sometimes plays an important role at this time.

Noise: The influence of noise on the production of fatigue becomes a most important medical problem, and has been ably handled by Spooner (10) of the International Committee on Industrial Fatigue, London.

The Remedy: This may be divided into two principal classes (1) Fatigue elimination, and periodical rest during employment. (2) Rest and sleep after employment. The first is well under way, and has already become an educational adjunct, as shown by Swarthmore College, Frank B. Gilbreth and L. M. Gilbreth (11). This shows that, "Swarthmore, the first college to celebrate Fatigue Elimination Day, made a Fatigue Survey of the college and prepared an exhibit. The junior students of mechanical engineering looked up fatigue devices, designing and making such as they thought would fit their own cases. Several Gilbreth fatigue eliminating charts were also made. A number of Philadelphia firms sent representatives to demonstrate their products along this line. On entering the exhibit room, the first thing noticed was a large banner giving Gilbreth's seven causes of unnecessary fatigue. Charts were hung conspicuously about the room explaining the nature of fatigue, showing the fatigue cycle, and how fatigue accumulated throughout the day, as well as the effects of bad light. One feature especially interesting to the engineering students was the mechanical computing section, which included logarithmic paper stunts, slide rules, computing watches and electrically driven computing machines. This exhibit proved that students will take an interest in an activity that connects the college life with industrial life as readily as one that has very little practical or educational value. Fatigue Elimination Day now has a permanent place on the Swarthmore College calendar, and in addition quite a series of valuable articles, appearing in *Nation's Health*, which will soon lead to the definite establishment of statistics and standards for computing and recording these valuable data."

Sleep: This can most advantageously be approached by a consideration of an extract from one of the real medical classics, which will stand out in perpetuity, midst all that has been written on the subject, that of the distinguished English surgeon, John Hilton (12), in his immortal course of lectures on "Rest and Pain" as follows:

"Regarding this subject of Rest in its highest, closest and best relations to mankind, and looking at it by the aid of my feeble penetration, I would, in all humility, remind you that when God ordained that man should live by 'the sweat of his face', as a punishment for his disobedience, it pleased Him, in the plenitude of His unspeakable benevolence, to permit man's fatigue and temporary exhaustion to be followed by his greatest earthly solace,—the blessing of rest and repose, by calm and peaceful sleep; a blessing which should be the immediate reward of his labor. Nature devoting her best efforts, during this period of rest and sleep, to repair those powers which may have suffered exhaustion to renovate the bodily strength, and

to restore the mental vigor, mitigates man's punishment by a source of real and refreshing enjoyment, enabling him to resume his labor in all the delightful vigor of a renewed existence."

History often repeats itself in medicine. There has been more learned of the functional capacity of the heart, from the estimation of its recuperative power since the introduction of digitalis, than before. Likewise the physiology, at least of abnormal sleep, will be augmented, since the study of encephalitis lethargica, and the probable seat of the sleep center established.

The time is now ripe for a painstaking investigation of the effect of induced regular periods of physiological sleep for the elimination of industrial fatigue. It will be conceded, of course, that before the systematic promotion of physiological sleep for the industrial worker is possible, many of the aforementioned contributing causes must be eliminated, many of which are purely social problems, and enlist the earnest cooperation of social workers. Physiological rest is not possible, if the individual has to carry his work to bed, or his domestic troubles to his work, nor is physiological sleep always possible without the abolition of those irritations of the mind or body, which ultimately cause a progression from fatigue on exhaustion. In the latter case there follows a replacement of the industrial unit, in the form of a weak link. As physiological sleep, free from external irritation, is not possible during employment, but only periodical rest (generally only physical), *due to the inseparable proximity of the employment*, the proper appointment is only possible after working hours, and probably only then, when it becomes a remedial rather than a prophylactic measure. All noise and irritation should be abolished, in order that they do not act as additional impediments to the recuperative value of sleep. The stimulating effect of a hot drink, such as milk or lemonade will often bring on a reaction followed by sleep, possibly due to a determination of blood to the stomach, and although possessing no intrinsic value in itself, is a time honored measure employed by the laity in cases of colds and acute bronchitis, and advocated by many authorities, Osler (13), Anders (14), etc. In most cases this mild and drugless form of treatment is not sufficient to obtain results and a light sedative is indicated. Most patients particularly those of a highly excitable temperament have, however, a natural aversion to, and often a dread of, taking any form of sedative or hypnotic, ever fearful of a habit forming tendency. Experiences have proved bromide to be the ideal treatment for these cases and there is now available a dosage form which permits applying the treatment without the patient being aware of a sedative being employed. Sedobrol cubes, as the preparation is named, contain in each cube seventeen grains of sodium bromide only, and sufficient vegetable extractives and seasoning to produce a palatable bouillon, thus combining the value of the medication, the hot drink, and the palatability. In addition, the patient does not know of the sedative used and thus, as the case improves, a plain broth alone can be substituted. The hot drink ensures a speedy distribution of the sedative. Nor must the psychic effect be overlooked, where a savory drink is taken on retiring. On account of the comparatively small amount of sedative administered, general nervous excitement is diminished, peripheral stimuli inhibited, and the reflex centers of the cord quieted. My experience with this method has been quite uniform, and meets all the requirements for the medicinal treatment of cases of industrial fatigue, not accompanied by organic changes. The most valuable feature of this treatment is that it promotes natural sleep, followed by refreshment, recuperation, and initiative for the renewal of industrial duties, and an abso-

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A Method of Preventing the Removal of Tonsils and Adenoids and Its Usefulness in the Treatment of Nose and Throat Defects in General (Ewens' Uvulectomy)

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For many years the writer has shared the sentiments of that group of the profession which does not altogether endorse many of the surgical procedures commonly employed in nose and throat practice—notably the removal of adenoid tissue from the oro- and naso-pharynx and destructive operations within the nasal cavities. That these procedures are frequently attended by negligible results is well known, and it is not unusual to witness effects which seem to come within the category of positive harm. It is not prejudice, however, that is even partly responsible for the presentation of this paper, although it is hoped that the observations herein reported, when verified by the profession at large, will constitute an effective plea for greater conservatism in the treatment of diseases of the nose and throat.

Whatever may be the line of reasoning that justifies the present-day wholesale removal of tonsils and adenoids, one very important element in its consideration is apparently almost ignored, i.e.—the probable function of the structures that are so readily sacrificed. A very natural response to this criticism would be that the physiology of the tonsils has never been definitely agreed upon, and that, even if their exact function were known, it would have little or no weight in the presence of a pathological condition demanding surgical removal. To uphold their contention my opponents might cite the approved treatment of a diseased appendix, and yet this, in reality, is not a parallel at all; because there is far more room for conjecture as to some important function of the tonsils and, on the other hand, less evidence of a comparable danger from diseased tonsils that remain undisturbed. It has always seemed to me that tonsils, because of their histology, their known relationship with the cervical glands, and the obvious need for an abundance of lymphatic protection in the exposed avenue that serves both respiration and deglutition, should be regarded unquestionably as important units of the general lymphatic system. If this be true, it would seem to place the promiscuous excision of lymphoid tissue from the throat upon an extremely unscientific footing.

Experience of recent years has convinced me not only of a vital need for the lymphoid structures with which the upper respiratory tract is so generously provided, but that it is in the splendid performance of their important task that they become surcharged with the products of bacterial activity and themselves ultimately infected. Hence the logical question seeming to confront us is how to lessen the burden put upon these barriers to infection, and not how to get rid of the barriers themselves simply because they have suffered through the exercise of their protective function. Most certainly we would not direct local treatment, surgical or otherwise, to an axillary or inguinal adenitis without first attempting to determine its probable origin in some extraneous focus of infection. Why, then, should we not, by analogy, be induced to reason in a similar manner when confronted with the involvement of glandular structures in the throat? It is true, of course, that glands communicating with, and directly exposed to, a mucous surface would be much more susceptible to primary infection than

glandular structures not so situated. However, one of the purposes of this paper is to show that a large majority of infections occurring in tonsils are probably not distinctly primary, but find their way into the tonsillar substance and peritonsillar tissue presumably through lymph-channels—the infectious material being conveyed from a broad expanse of catarrhal mucous membrane, and not necessarily from that portion immediately covering the gland.

A series of approximately two thousand cases has revealed to the writer the rather startling fact that a large share of blame for protracted naso-pharyngeal catarrh, tonsillitis, chronic hypertrophy and its various obstructive manifestations in both the throat and nose can be squarely placed upon that apparently innocuous appendage—the uvula. At first sight this claim may seem to border upon absurdity, but it gives promise of becoming an accepted clinical fact.

Circumstances antedating the investigation that warrants the above claim were quite accidental. Their recital should not be omitted inasmuch as they contributed the very foundation and incentive for all that is embodied in this report. As far back as 1905 I became enthusiastic over the excellent results obtainable from uvulotomy as a measure for the relief of aggravated and protracted coughs, especially that type commonly known as the "cigarette cough." Its earlier employment was restricted to those cases in which the uvula was extremely elongated, but it subsequently proved equally efficacious in many instances where elongation was not so pronounced. The number of cases so treated, many of them amongst the transient population of Atlantic City, grew in the course of years to a rather substantial total. From time to time there were renewals of acquaintance with some of these out-of-town patients, and now and again one of them would show a disposition to exaggerate the benefits experienced during the years following amputation of the uvula. At any rate statements of this character did not engage any serious attention until about five years ago. The ensuing investigation had not progressed very far when it became apparent that these supposed "exaggerations" possessed a real semblance of truth and value.

As this investigation advanced the field of application for "uvulectomy" steadily broadened until, in my hands at least, it has attained a scope amazingly inconsistent with its lack of support in medical literature. (The term "uvulectomy," in preference to uvulotomy, is purposely used, because removal of the uvula in its entirety is the procedure advocated).

As the skepticism in store for this initial publication of results from "complete uvulectomy" can hardly be lessened by presenting detailed case-reports, only a summarized account of its observed effects and usefulness will be attempted, as follows:

1.—It never fails to effect prompt improvement of catarrhal conditions in the throat and nose to a degree that is plainly discernible, and there are few coughs of any description that do not yield, in some measure at least, to complete uvulectomy.

2.—Susceptibility to common "colds," acute pharyngeal and laryngeal inflammations, tonsillitis and quinsy, so pronounced in many individuals, is decidedly lessened.

3.—Chronic hypertrophy of the faucial tonsils, and other susceptible lymphoid structures of the pharynx, is materially reduced in many cases, especially during early childhood, and always to a degree that would compel hesitancy in resorting to popular surgical measures. In conjunction with this observation it has been the writer's pleasure to repeatedly witness relief from tinnitus aurium, as well as marked improvement in hearing when the impairment was ascribable solely to obstruction of the Eustachian orifices.

4.—Nasal obstruction, due to encroachment of the turbinates, whether associated with marked deformity of the septum or not, is usually relieved to a degree that surpasses the benefits ordinarily obtained from operations within the nasal cavities. Coincident with this effect there is often prompt and decided relief from associated sinus symptoms. (Experience to date justifies reference to only the frontal and maxillary sinuses.)

5.—Mention should be made of the cases (somewhat too numerous to be regarded as mere coincidences) in which subacute arthritis, postinfluenzal neuritis, and myositis, that had resisted previous treatment, showed improvement or completely disappeared.

6.—A response has been observed in a few cases of bronchial asthma and hay-fever, but the results on the whole have been disappointing. The effect in certain cases of so-called "cardiac asthma" has been most gratifying. Where coughing has been a conspicuous symptom, although presumably of cardiac origin, it has yielded sufficiently to relieve the overtaxed heart and bring about a decided abatement in the dyspnoea.

7.—Correction of that nocturnal nuisance—"snoring"—can frequently be effected.

8.—Anaemia of obscure origin, and rebellious to treatment—especially when associated with pronounced pharyngeal catarrh and involved tonsils—often responds. This observation has been remarkably constant in children.

9.—In only a limited number of cases of pulmonary tuberculosis has the consent of the patient to a proposed uvulectomy been gained, but in every instance where cough was a troublesome symptom results have more than justified the measure employed. This phase of the subject is intensely interesting because of the marked general improvement in these patients consequent upon the abatement of aggravated coughing. The extreme frequency with which this type of tubercular patient presents an angry, elongated uvula, and the fact that the history of a cough in these cases so often widely antedates all of the other classical evidences of the disease, opens a wide field for conjecture and investigation. In the light of future disclosures it is my opinion that an "abnormal uvula" will be assigned a conspicuous place among the aggravating, if not the predisposing, causes of pulmonary tuberculosis.

The apparent extravagance of the foregoing statements may seem inconsistent with the promulgation of a new subject, and will naturally give rise to the question that has already been asked, viz.—"Does the originator admit that such a thing as a 'normal' uvula exist?" In answer to this I can only say that the uvula's demonstrated potency for harm precludes an admission that any catarrhal throat can contain a normal uvula, whether appearances clearly denote abnormality or not. My own experience impels me to prophesy that the removal of uvulae from the throats of children will some day become a common practice—perhaps a routine comparable to vaccination. The most skeptical will be speedily converted after a

practical demonstration of its effects upon the characteristic condition in early childhood that nowadays demands the removal of tonsils and adenoids.

It is probable that pathological investigation along the lines suggested by this paper will disclose definite reasons for the clinical observations reported. However, until this more exact explanation has been determined, it shall be my opinion that the uvula gives rise to disturbances in the throat and nose for the following reasons:

In the first place the uvula is obviously a source of mechanical irritation when elongated to an extent that permits it to drag upon the tongue, or upon the posterior wall of the pharynx when the individual is recumbent, and particularly so when repeatedly subjected to the harsh treatment it receives in the act of snoring.

If its vascularity is an index to its vitality and resistance to infection it possesses very little, because in the removal of over two thousand the control of hemorrhage has not become necessary in a single instance, and it is exceptional to witness a persistence of oozing for as much as five minutes. Many uvulectomies are accompanied by the loss of practically no blood at all.

Its anatomical location and conformation keep it supplied every minute with from sixteen to twenty-four fresh installments of foreign material, bacterial and otherwise, with which the atmosphere of a humid climate abounds. Presenting, as it does, a moist, warm, pendulous surface, feebly supplied with blood in contrast with adjacent structures, it provides an ideal bacterial nidus.

A macroscopic examination after removal shows it to be composed mainly of reduplicated, bloodless mucous membrane exhibiting marked signs of thickening, and enclosing but little muscle tissue, the latter being found chiefly at its extreme upper portion. Its gross appearance would enable no one to regard it as a healthy piece of tissue in any instance where its removal has been deemed expedient.

After giving due consideration to these points, it should not greatly tax the imagination to form some understanding of the potentiality for harm residing in this tiny and superfluous bit of tissue. The bacteria that it incubates spread by direct continuity to adjacent structures, and remote effects are produced through the medium of lymphatic and venous absorption from a broad surface thus involved. The nasal cavities, pharyngeal vault, faucial and lingual tonsils and the larynx are none of them very distantly removed from this nidus of infection.

In the minds of most people, including the medical profession, there seems to be an inherent idea that an indispensable utility resides in the uvula. Despite the obviousness of its real function, it does not serve any vital necessity. This has been clearly established by a wide experience, and as testimony to the writer's conviction in this matter it might be stated that he removed his own uvula some time ago. Disappointment is apt to follow an attempt to determine in any given case "how much" of the uvula should be removed. No procedure is recommended that does not contemplate removal in toto.

The extremes of age in the series of cases subjected to this method of treatment have been sixteen months and eighty-three years. In children under six years general anaesthesia is usually required, but the operation can be made practically painless by the topical application of cocaine. (The rapidity of absorption and depth of effect here observed seem to emphasize the possibilities from excessive bacterial activity upon the mucous surfaces of the throat.)

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The Internal Action of Animal Charcoal

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Carbo sanguinis or *animalis*, seems to be used relatively little internally although it is one of the most valuable agents we have for the treatment of diarrhea and gastro-intestinal disturbances in general. Its action apparently depends on its great absorptive powers and was always thought to be a purely physical one. In fact all text-books state that animal charcoal taken internally has no chemical action. At the same time this whole subject is still under investigation. We do not even know why animal charcoal decolorizes where wood charcoal does not. The theory that insoluble calcium salts are formed and the color thus precipitated is certainly not tenable.

Although my work is almost wholly confined to gynecology and surgery I have often had occasion to use animal charcoal. In 1917 I first observed a reaction following the ingestion of this substance which seemed to show that its internal effects are not solely mechanical. The symptoms produced by the administration of the animal charcoal were harmless in themselves but at the same time rather alarming while they lasted. They consisted of vaso-motor disturbances occurring immediately after the drinking of even very small quantities of alcohol in patients who previously had taken *carbo animalis*.

To illustrate these symptoms it will perhaps be best to cite the case history of the patient through whom this internal action of the charcoal was first discovered:

Patient A., healthy young man, 30 years old. For the past week he had suffered from severe intestinal colic and diarrhea. Salol, bismuth, bolus alba, tannalbin, etc. had not achieved results despite a most careful diet. Opium had never given more than temporary relief. I therefore tried powdered animal charcoal (from F. M. Andreae, Frankfurt a.M.) giving the patient a heaping teaspoonful, wrapped in a wafer, three times a day and also 15 drops of 10 per cent HCl in water to counteract any excessive absorption of the gastric juice by the charcoal.

After four days of this treatment all symptoms had disappeared. However, to avoid a relapse, the patient continued the treatment another four days, taking a half teaspoonful of charcoal and ten drops of HCl. On the evening of the eighth day (after the beginning of the charcoal treatment) the patient drank four 8 oz. glasses of beer (alcoholic content between 1 and 2 per cent). After the second glass he noticed a feeling of heat and burning of the face, which shortly became deep red in color. He also had marked cardiac palpitation. I saw the patient one hour later. At that time his whole head, neck and upper chest were deep red, likewise his hands and feet up to and above the wrists and ankles. The pulse rate was 120, respirations 40 per minute. The patient complained of palpitation of the heart and some dyspnea. There was no elevation of temperature.

I did not at first know what to make of the condition. There was no history of a previous similar attack either with or without alcohol and besides the amount of alcohol taken had been very small. I did not think at that time of any possible connection between the attack and the administration of the animal charcoal. After about two hours the patient was perfectly normal again. The following day, after a half glass of wine similar symptoms again developed. This did seem to me now

to point to a relationship of the attacks to the ingestion of the charcoal. This supposition was further strengthened two weeks later when the patient once more had similar symptoms following the imbibing of two or three glasses of beer two days after he had again taken charcoal for a recurrence of the diarrhea. Between times the man had taken small quantities of alcohol but no charcoal and had never had any untoward symptoms.

I now determined to investigate if the animal charcoal was really responsible for the vaso-motor disturbances observed and also if the mode of administration of the charcoal had any influence on the occurrence of these symptoms and further if possibly the particular charcoal in question (F. M. Andreae) alone produced such an effect. I therefore gave the same patient animal charcoal in compressed tablets or in suspension in water or coffee. No reaction followed unless alcohol was taken but even minute quantities of the latter immediately produced the same symptoms as above described. The identical reaction also followed if no HCl was given, but never after ingestion of the HCl alone. Another brand of animal charcoal (Merck-Darmstadt) had a similar effect as the first. Wood charcoal however produced no symptoms at all.

There remained still another point to determine and that was whether the whole disturbance was not perhaps only an idiosyncratic reaction on the part of the particular patient tested. For this reason I gave four patients, who voluntarily submitted to the experiment, animal charcoal three times a day in various forms, in the same amounts used before. On the fourth day each of the four women received a glass of wine. All four reacted in the same way as the first patient although there were individual differences. All four patients became very much flushed and had cardiac palpitation of varying degree. The pulse rate of the first woman rose from 75 to 92; of the second from 80 to 95; of the third from 84 to 110; and of the last, from 65 to 88. Two of the women also complained of dyspnea. A week later the effect of alcohol alone was tried out on the same patients. Each one again received one glass of wine. This produced very little reaction, as all the women were more or less accustomed to alcohol due to the general use of hard cider in the community. No flushing or dyspnea occurred and the greatest increase in pulse rate was 10 and that only in a single case.

I now once more tested out wood charcoal in the same way but again saw only negative results with it. I therefore considered it proven that animal charcoal could exert a very definite chemical action on the body and produce vaso-motor disturbances under certain conditions such as, for instance, the presence of alcohol. At the same time I thought I observed a lessened reaction in patients who had received charcoal over a continued period of time.

Since the time of these observations I have been able further to confirm them both clinically and experimentally. With myself as a subject I took various brands of our domestic and also some brands of imported animal charcoal in different forms, and then alcohol in various combinations, also pure grain alcohol in various strengths up to 50 per cent. In every case the same flushing, palpitation and dyspnea was caused as has been described.

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The Nutritional States in Childhood

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For a better understanding and a more intelligent treatment of the subject of nutrition and nutritional disturbances of infancy and childhood, a clear comprehension of the various nutritional conditions, and their effect upon, and by the various physiological and pathological processes is both desirable and necessary.

With these objects in view, nutritional conditions are divided into three classes (Prof. Mayer, Berlin), viz.:

1. Eutrophic.
2. Dystrophic.
3. Atrophic.

A child is said to be eutrophic when he is normal in weight and height, gains in both progressively, has a proportionate development, with normal digestive and assimilatory powers, and normal resistance and tonus. In a word, a eutrophic child is a healthy child.

Dystrophy is a status of nutrition one degree below normal. The child is not up to the standard in weight, height, development, digestion and assimilation, and has diminished resistance and a more or less flabby musculature. He is stationary and not gaining in weight over periods of time, and is anemic. There may be diarrhoea, though its presence is not essential, but there is no vomiting, nor fever, unless, of course, a gastro-intestinal disturbance is superimposed. A dystrophic child is, then, to say the least, a feeble child.

Atrophy is the extreme type. It is the result of a long continued inanition. In this nutritional condition there is a progressive and rapid loss of weight and strength. Digestion and assimilation are very feeble, the child being easily upset by foods of any description. The resistance is very low, an easy subject to diseases and disturbances of all kinds, from which the child makes but a slow recovery, if at all. The muscles are disappearing and the parts left are atonic. The skin is wrinkled and gives an aged look to the child. There is restlessness but no stupor, the mentality being clear as there is no toxemia in atrophy *per se*. There is a tendency to subnormal temperature, especially when food is withdrawn, even only for a few hours. Oedema often develops, giving rise to a false gain in weight, leading to diagnostic errors. There is also a drop in the pulse rate, even to 50 per minute, especially on hunger. Diarrhoea is often present, though not essentially. Emaciation aptly designates this state of nutrition, which is usually chronic.

Normal tonicity is depended upon normal turgor, which is maintained by a well balanced pressure between the cell and the water contained therein. With a diminished water content, the cell dries and loses its turgor. In atrophy, the water content of cell is practically nil, therefore, the loss of tonus in the muscle cells.

The state of nutrition can well be judged by the extent and distribution of the adipose tissue on the surface of the body. In eutrophy, there is an abundant deposition of fat, and typical of this stage, especially after the age of one month, is the adipos abdominalis. In dystrophy, the amount of fat is much reduced and the abdominal fatty pad is absent, which is characteristic. In atrophy, there is no fat anywhere, and the last place it disappears from is the face, which is characteristic.

Feeding in health and disease, prognosis, and treatment, depend upon the nutritional state of the patient. In prescribing the feeding formula and the diet in general, we must know to what nutritional group our pa-

tient belongs, for the reaction toward the food-stuffs is different in the various groups. A eutrophic child will thrive on almost any formula. He can tolerate and digest various articles of food without any difficulty, and will not easily be upset by indiscretions in the diet. Not so, however, in the dystrophic child. He cannot digest or tolerate all foods, and easily develops dyspeptic disturbances on the slightest provocation. While he may get along fairly well on a certain formula or food, substitution or addition of another article of food, or some modification of the formula will promptly cause diarrhoea or other gastro-intestinal symptoms. Much the same conditions prevail in atrophy, only to a far greater degree. Feeding in an atrophic child is, at the best, a very difficult problem that taxes the skill and the patience of the physician to the utmost.

Difficult as feeding may be in the lowered nutritional states, the difficulty becomes greatly multiplied if a nutritional disturbance or diseased condition be superimposed. As result, therapeutic measures which are quite suitable for one nutritional state are inappropriate for another. Take, for example, the starvation treatment for acute enterocolitis. It is perfectly safe to starve a eutrophic child for 24 hours, nothing deleterious will happen to him. The reaction to starvation, however, is different in the other two cases. The dystrophic, and more particularly the atrophic child, will lose weight heavily, run a subnormal temperature and pulse, and while he may be benefited in so far as the symptoms of the disturbance are concerned, the benefit derived is by far over balanced by the further reduction in his vitality. The atrophic child may even go into collapse and die directly due to the starvation.

The effect of the state of nutrition upon infection is well illustrated by a graphic mortality record. The eutrophic children will recover from a certain infection after an average duration of 3 days. The same infection in dystrophy gives a mortality of 20 per cent, with a duration of illness from 1 to 3 weeks, and in atrophy a mortality of 80 per cent, and an average duration of illness of 6 weeks (Prof. Mayer).

Not only are hypotrophic children more apt to infections, but simultaneously with the infection, they are very likely to suffer from some nutritional disorder. Seventy per cent of the younger children suffering from infections are complicated by digestive disturbances, and of these the majority are dystrophic or atrophic.

Upon the status of nutrition also depends the reaction towards exposure and heat. Both dystrophic and atrophic children, and more particularly the latter, bear climatic changes daily. In the winter it is the respiratory tract, and in the summer the intestinal tract that bears the brunt of the climatic exposure.

Transition from one nutritional state to another is a common occurrence. Through a diarrheal condition, a eutrophic child may become dystrophic directly due to the inanition caused. It is easier for a dystrophic child to go into atrophy than it is for an atrophic child to become dystrophic, or a dystrophic child going into eutrophy. In other words, it requires a good deal of care and worry to transfer a hypotrophic child into eutrophy. Some hypotrophic children can never be transformed into normal children, in spite of all treatments. Others recover the normal condition in a few months, though the transition may not be complete until the third or fourth year.

In judging the nutritional state and developmental progress, mere observation of the weight is not sufficient. The length is equally as important, in fact more exacting, especially in older children. If there be no gain in weight for several weeks, one or more of the several causes may be at fault. But it may not be a serious affair and may be subject to easy correction. If, however, there be no gain in length for the same period of time, it usually indicates a serious nutritional disturbance and requires prompt and energetic measures for its correction. Weight and height as gauges of nutrition can well be compared to two scales, one measuring pounds and the other ounces, the former detecting gross and the latter finer changes. By observing the weight we can note the macroscopic nutritional development, and by observing the height we will note the finer, we may say microscopic development. And as both macroscopic and microscopic observations are necessary for the proper study of a pathological specimen, so are both weight and height necessary for the proper study of nutritional development.

Nutrition and disease are intimately concerned with height, but the question is what part of the nourishment size depends on. However, no element of food is solely concerned with size, but, like in weight, all elements are required. There are probably no specific growth vitamins. Size as a family trait, however, is to be considered, also the influence of endocrinology on growth and development.

Important adjuncts in judging developmental progress and state of nutrition are the dimensions of the head, chest and abdomen. Therefore, in estimating the nutrition and development of a child, all factors—weight, height and circumferences—should be taken into consideration. Excessive and diminished measurements, as well as disproportionate development of the different factors, bespeak of a nutritional disturbance, the gravity and extent of which is proportional to the degree of the departure from the normal.

In studying the causes of the hypotrophic nutritional conditions, we find that the vast majority of cases are found in artificially fed children. This is very significant. It proves conclusively that no matter how closely analogous bottle feeding is made to breast milk, it is, at its best, but a poor substitute. Then again, errors in the chemical or physical character of the bottle, or in the method of feeding or preparation are very prone to occur, further strengthening the predisposition towards subnormal nutritional states.

The causes of the hypotrophic nutritional conditions are various. In general they may be inherent in the child, endogenous causes, or in outside sources, exogenous causes, or in both, polygenous causes. Ranking foremost among the endogenous causes is enfeebled digestive and assimilatory power of the child. The food, both from the qualitative and quantitative aspects and caloric value is all that can be wished, but the child cannot digest and utilize it, either due to an inherent general low vitality or to an inherent digestive enfeeblement. Such children are frequently found in delicate parents, or parents the subject of tuberculosis, lues, or alcoholism. Often, however, the history is negative, the parents being normal and free from disease. Probably there is a diminished ferment action in such cases with constitutional devitality.

Prematurity is another important endogenous cause. Here, also, there is diminished vitality and digestive power, directly due to the lack of full intra-uterine development.

Among developmental causes of hyponutritional states the most conspicuous is pyloric stenosis. Due to the inanition in such cases atrophy rapidly sets in.

Foremost among the exogenous causes are those intimately concerned with food and feeding, that is, the alimentary causes. Improper food is responsible for fully 75 per cent of the hypotrophic nutritional states. It may be the quality, quantity or caloric value of the food that is at fault, or it may be its method of preparation, manner of its administration, or its sudden change. There may be a qualitative or quantitative deficiency or excess in some element of the food, particularly carbohydrates. Very often an addition of carbohydrates, either sugar or flour, will restore dystrophy into eutrophy. Lack of fat is hardly a cause of dystrophy in many cases, it is more apt to be a deficiency in the protein, especially in breast milk. Scarcity of salts is but rarely the etiological factor, but lack of vitamins is often the causative factor, especially in older children. Prolonged nursing without any other food, and exclusive use of proprietary infant foods, for a considerable length of time, are responsible for many cases of hypotrophic nutrition. Occasionally malnutrition may arise not because of any error in the food, but due to the refusal of the child to take food in any form or manner.

Next to the food the most frequent etiological factor of dystrophic conditions are the infections. An intractable diarrheal condition, an attack of influenza, measles, or any other acute infection may so undermine the child's nutrition as to result in dystrophy.

Of lesser importance, though of considerable weight, especially in association with other etiological factors, is bad hygiene. Overcrowding, lack of air and sunshine, and indifferent personal cleanliness can of themselves result in dystrophy, irrespective of the nature and the amount of food. This is the reason why eutrophic children are conspicuous by their scarcity in institutions and asylums. In this category may also be mentioned heat. Children, and in particular infants, bear the warmth of the summer months badly, since their heat regulatory mechanism is but imperfectly developed. The immediate effect of the heat is to depress ferment action in the stomach and intestine, followed by a bacterial supremacy and fermentation.

Other exogenous causes have to do with pathological conditions in the mother, inimical to good nursing. Debility in the mother, whether from disease or mental or physical strain, reacts unfavorably on lactation. The milk is either scanty in amount or defective in any of its constituents. Faulty development or disease of the breast or nipple, and poor glandular development also lead to hyponutritional states in the child, and so does pregnancy.

Often malnutrition in the child is caused not by any one factor, but is due to a combination of several causes. A very common polygenous cause is an infection superimposed on a digestive enfeeblement. Frequent also is poor hygiene combined with poor food. As is seen then, several causes may cooperate in the production of dystrophy or atrophy.

Resumé of the causes of hypotrophic nutritional conditions:

A. Endogenous:

- | | |
|-------------------|----------------------------|
| 1. Constitutional |) a. Digestive Debility |
| |) b. Congenital Devitality |
| 2. Developmental | a. Pyloric Stenosis |
| 3. Prematurity | |

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Poise Between Structures and Energies as a Basis for Repair

With Special Reference to Motor Re-Education in the Mature Adult.

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The study of man as an individual is an appraisal of human energies and how they come to him first through inheritance, and second through his environment. The primary instincts, impulses, urges are designed to dominate—at all times and under all circumstances—man's environment and to prevent his environment from dominating him.

Man, like other living beings, captures his energy from the common source, "the cosmic energy of the known universe." He then transforms it to meet his needs, and discharges it through functions, in such forms as metabolic, reflexogenic, behavioristic or other. Here we visualize man as an adaptative mechanism.

The aim of the living being is to attain and maintain and regain poise, balance, in short stabilization. "Life is not an entity but a series of [harmonious] relationships between organism and environment." (Prof. J. Arthur Thompson.)

There is much, however, in life besides existing, progressing and achieving. It is full of meaning, of sparkle, of subtlety and surprises. "We need not be the least afraid of engendering an exaggerated idea of the wonder of life." An essential attribute of life is a series of movements, alternations of action and rest. The negative phase, rest, is of value in proportion to the previous completeness and accuracy of the neuro-muscular functioning. The resultants constitute poise. Through balanced action and rest comes serenity, tranquility, an essential condition of repair, of energy renewals, a re-establishment of harmonies, hence the prolongation of efficiency, productivity and mutualities of effort.

In all nature—inanimate and equally animate—the prime condition of fitness, integrity and co-ordination, is balance between structures and energies. In the living being this equilibrium is accompanied by tides of growth forces which rise and decline, advance and retard or stand still, in life cycles. Perpetual perils arise in the environment which tend to interfere with, to impair or to destroy poise, harmony, the power to come back to equilibrium after being disturbed.

No living creature can escape some or other of these hurtful influences. Life thus becomes a ceaseless struggle for poise, for reducing to the minimum any disarrangements of action patterns, any impairments of vitality, or depressions in living energies.

Disturbing environmental pressures are not only powerful in themselves but they produce hurtful after effects the nature, character and extent of which demand recognition at the earliest moment; also guidance in overcoming imbalances as best one may.

The province of so-called physical therapy is to put to use whatever agencies which can be appropriated and adapted from the powers of the world without to give man adequate dominion over hurtful agencies proceeding from the outside, to give him conscious dominion over the aggregate dangerous or hurtful effects of his environment. Nor must one forget the potency of disharmonies due to disturbing effects arising from within, notably from the worst of all—fear, anxiety, suspicion, dread.

The most distressing, exhausting, puzzling form of

dread is the anxiety of not coming up to one's expectation of one's self. This subject deserves elaborating and my argument will later be submitted.

Poise, Balance, Stability, Harmonious Energizing as the Chief Condition and Index of Health.

Contrasted with poise is imbalance, commotion, tumult, tremor, convulsion, as indicative of unhealth, disorder or disease. The mean is achieved through automatic stabilization.

Clinical problems often grow simpler when reckoned with from the standpoint of less or more energy output. Of equal import are states of biogenic symmetry or of asymmetry, the means of obtaining which we may call orderly performance or balanced movement.

The true aim is ever—or should be—to view things and forces in their due proportions, as to mass, velocity, ponderability, arrangement, etc., in accord with the laws of bio-physics.

It is equally desirable to note and allow for differences in changeability, variability, adaptability and the like. This assumes a norm of energizing within permissible biologic limits of movement, as contrasted with an abnorm in states of energy drive which may pass beyond stress, verging on distress and thence disease.

A good working habit is to keep certain energy standards in mind, to appraise the display of forces as they ebb and flow, fluctuate or change, especially the local forces, and to refer them automatically to their causes—they oftentimes being merely secondary causes—which also aid in explaining significances.

We strive to keep in mind—or believe we do—variations in energies, normal or abnormal as displayed, for example: in the circulation, the heat making, the respiratory, metabolic, and the like defense mechanisms.

Nowadays we have come to observe—thanks to Saignes—more consciously endocrine or glandular manifestations. Some physicians give most of their attention to divagations of the psyche, to mental conflicts and such like quernesses of the unconscious self or personality. All have their values which demand viewing in due proportionatenesses. In watching energy variants in special organ systems we do well to keep fairly in view other, subsidiary or collateral energies, and appraise each as they bear upon the unity.

My special aim is: to solve clinical significances by the habit of also watching these other, perhaps minor, sources of imbalance. Some must escape us. The part of wisdom is to let as few as possible pass unconsidered.

Certain forms of gross imbalance are obvious enough, as in the static or locomotor mechanisms. If not they will—on scrutiny—become revealed and in many directions and degrees, and oftentimes prove of assistance in directing the process of reestablishment. The mind may be able to maintain poise while the body is in commotion, but certain it is that poise of personality is more practicable in a well poised body. Certain it also is that the psyche will best selfadapt itself in proportion as the soma becomes and remains in poise.

Thus the factor of impaired energy equilibrium deserves presentation from various angles, slants or impulsions, as observed in manifold processes and their

effects. To recognize and give them their due place in the reckoning makes for effectiveness in the application of corrective measures.

In directing attention to features of imbalance many points will seem trite enough. They, however, justify attention in forming a concept of the whole.

My object is to offer memoranda deserving correlation in any clinical process. If too many of these points are overlooked or neglected, prompt and full recovery will be delayed or thwarted.

The search for curative fundamentals leads one straight back to the primal urge of protoplasm which is to recover balance after encountering adverse forces. The chief defense reaction of the animal body is the tendency to resume its former shape or cellular adjustment after being disturbed. We may call this automatic poise or equilibration.

While this impulse toward stabilization may be in essence the sum of all the forces exerted upon a ponderable mass, in human physiology there is obviously much more to reckon with. The human organism possesses consciousness of two major kinds, the cerebral and the cellular.

Consciousness in any form may arise in one and the same essential attribute, and this again may be a mere manifestation of the universal something which maintains the stars in their courses, of poise in the diverse and particular parts of the visible and knowable creation.

All life being motion, and the elements of motion being both potential and actual, dynamic and kinetic, we may profitably approach the solution of problems of body functioning or dysfunctioning from the tangible standpoint of life motion. (bio-kinetics) and make free use of guiding principles thus supplied, especially such as are fundamental yet easy to reckon with.

No more obvious and tangible manifestation of life exists, both for indicia and conscious determination, than the human muscles. We may safely assume, in accord with the evidence (whether this has achieved a proportionate attention or not) that by suitable retraining or re-education of the muscles we shall make the most practical, and perhaps the most essential, contribution to orderliness or health.

This training in motor performance would seem to be the first step in any reparative system, since it underlies and conditions all the residue. Metabolism, tissue respiration, and all the complex and elaborate biochemical, enzymatic, glandular, secretory and other processes, rest squarely upon adequate body movements. To cite a symbolism, "the spirit must dwell in a house of clay." The soul must have a temple of flesh and bones; spirit stands on a full parity with bodily manifestations of certain forces, and as yet unnamed entities among the accessory, supplemental, catalytic or other factors in sustained existence.

We may now proceed to unfold the theme and glance at some familiar facts:

Re-education of muscles in the mature adult is admittedly an important means of restoring structural and functional poise or competence, also of sustained efficiency, of endurance and survival values. Likewise it is an intimate agency in mental equilibration.

Motor retraining includes expert muscle re-education, both in active doing, and passive or received movements, also the resources of manipulation or induced movements and other readjustive procedures. Of equal significance is the negative phase through agencies applied in e. g. *systematized rest treatment*. Of chief curative importance in any protracted or chronic disability, is restoration of poise through encouraging the qualities of sub-

missiveness, of mobility, pliancy, elasticity, and above all of precision and completeness in movements.

Motor training (kinesitherapy) thus comes to be of paramount importance for maintaining health, and for repairing a large group of departures from health and for removing their effects. These effects include disturbances both of the body and of the mind (somatogenic and psychogenic anomalies). The one so reacts and interacts on the other that they form a continuous entity. So significant are these facts, or deductions, that no clinician can afford to disregard, nor be ignorant of them.

Motion constitutes the basis of life processes along with its correlate rest. Hence living is a constant alternation of motion and of rest, of actuation and inhibition, of coming and going, of push and pull (rhythm), of measured movements, of startings and pauses. Thus are the primitive functions established through ebbing and flowing of forces and fluids whereby the cells take in, and thrust out, what is needed for growth, maintenance and repair.

The key to psycho-physical normality is to secure balance among all energisings, a poise, a harmony, a stabilization. The objective of repair measures is to restore spontaneous and also conscious poise. This poise is made up largely of muscular tone, or tonicity, a mild sustained contraction of opposing muscles whereby stabilization becomes automatically maintained. A higher tone in muscles may not change their positions, since the force to bend may be offset by an equal tension adapted to straighten. Changes of tone in the hollow viscera, such as the stomach, cause marked effects, since they alter the size of its cavity, and also its reflex responses.

All life processes consist of a series of muscular movements, conscious or unconscious. Muscular acts are voluntary, semi-voluntary, or involuntary, and we usually regard only those as "exercises" which are done to keep the voluntary mechanisms in order, or to improve or to reconstruct them.

Balancing of Motor Impulse and Restraint Making for Poise.

Certain muscles are called voluntary and others involuntary. Many involuntary ones are capable of becoming voluntary, either partly or wholly, if consciously directed. Acts so essential to life that they must be constantly performed are called automatic, they work steadily at all times, awake or asleep. Among these are movements concerned in respiration, in circulation, in digestion. The same is true of many acts designed to defend us, through the protective mechanisms, as of sense organs or the complex defense reactions against harm, such as winking to keep the eyes moist, to protect from dust and irritants; sneezing to throw off irritants from the nose; coughing to expel mucous or foreign bodies, vomiting to discharge hurtful objects from the stomach, and the like.

It is often desirable that these and other reflex automatic acts shall be brought under control of the will. Some involuntary or reflex automatic acts can be so trained as to produce amazing effects, even to the slowing or hurrying of the heart. Many complex acts take on protective functions through long repetitions of sequential processes, inherited or practiced, the result of instinct or ancestral complexes, which only need awakening when exigencies arise for them to work automatically and efficiently. For example: the ear is influenced by sound. The eyes then instantly turn, and with them the neck to see what it means, or what approaches; then the legs act involuntarily to leap, or the arms to defend. Even these acts need training to perform sufficiently and judiciously. So for example of

swimming, a latent automatism, sometimes capable of being efficiently performed in an emergency to save life or to serve some defensive or other useful purpose; but the danger is that unless consciously directed or trained the function may fail of instant achievement and the person perish. However valuable these instinctive acts may be they also need training in facility and in judgment, so as not to under act, or wrongly act.

The automatism of thrusting out the arms when we fall may invite a fracture, and yet the man whose occupation compels him to fall often—as the football player—must be taught how to manage his legs and arms and shoulders and head, so as to receive the least damage upon falling. Here we enter the domain of conscious control which involves even more inhibitions than actions, the underdoing rather than the overdoing, as may prove most economic or desirable. Voluntary structures must be taught self control from center to periphery. Numberless such group movements are of the utmost practical value, they stand ready to work automatically provided they are started right, and the component procedures shall be guided a few times, that is trained along the line of their design and latent aptitudes. "The muscles always have their steam up" (Colin McKenzie).

Long before we reach the point of exercising for benefit or pleasure we must learn how to use our voluntary mechanisms with accuracy, precision and also with carefully graded force, exactitude, nicety, and skill.

Exercises; Repeated Motor Performances

Exercises may then be divided into (1) the instinctive, reflex or automatic, (2) the essential, (3) the economically desirable, and (4) the satisfaction producing; and these again into the mandatory and permissive. Movements are performed well or ill in proportion as the demands made upon them are often enough repeated. Hence the muscles obey well or ill when urged by some innate necessity, or for re-education, taste or satisfaction. Inertia is anomalous or pathologic, demands special consideration, and oftentimes treatment.

That fat or lazy individual who has good legs and will not use them (e. g., a torpid flabby child) deserves some urging or coercion. He must be made to walk or even to run. Otherwise penalties ensue, loss of development and disuse crippling. Liberty is freedom to do the right thing; it is not freedom to do *no* right thing and thus become a dependent, a burden, a mere mass of disused or inactive parts or mechanisms. Safety demands self, also purposive, control from doing wrong things. Likewise in the use of the arms which are not so constantly needed or worked as the legs. For the arms a higher degree of training is demanded (mandatory) in precision, in proficiency, in movements specialized for expertness in the arts, in games, in industries, in war, and in other directions where exactitude is a necessary condition.

The only way to achieve motor expertness is to repeatedly perform a series of movements which simulate natural acts performed in an art, game or industry, until all the neuro-muscular mechanisms become trained, i. e., made to do the acts repeatedly for which they are not only designed but for which they are all ready to work properly and efficiently so soon as self encouraged and directed. Here is poised actuation and inhibition; the putting on of power, and of restraining power, just enough to achieve the act and no more, with no waste motion.

Too much repression of motor impulse defeats the object or obligation. Hence oftentimes the acts must be repeated, and as accurately as possible, till they become automatic in the larger issues, but with just that measure of conscious restraint whereby the gross direction

is maintained with full power and co-ordination, also with enough reserve to change direction and force in the performer, to meet, or adjust one's self to, changing conditions and needs.

Particularized Muscle Action, Specific Muscle Adaptation or Training.

The regulation of voluntary motion—kinesitherapy—is of a practical significance not as yet appreciated. Unless the muscles are re-educated after impairment from disuse, misuse or trauma or psycho-motor (or ideo-motor) confusion, the morbid effects tend to persist and induce chronic disabilities of far reaching character. These effects are both direct and indirect. Of the indirect note disuse effects upon thoracic structures, crippling the lungs, the heart and great vessels by compressions and inadequacies of muscle functioning. Note the need for balanced action of the heart to favor the coronary filling and emptying.

The mechanism of motion consists of two parts: (1) the center of energy transmission and: (2) the machinery of transmutation, transformation and application. When once it becomes realized that action and reaction are both equally significant—clinically as well as developmentally—we can then understand where the importance of conscious economic motivation lies. Thus it will be obvious that training in purposive movement is just as imperative for reconstruction and regulation as for conservation, for the preservation and integrity of the outlying parts.

The main objective of reconstructive motor training is volitional education. The impaired individual must realize—perhaps for the first time—that useful movements begin as an impulse to do, pass through a series of modifications until the purpose aimed at is achieved. Moreover when the parts concerned having been disordered or damaged, it is imperative to observe and direct the whole process and determine to perform the movement in the best possible, or most economic, manner. In short it is a re-education in conscious motor control.

This regulative control, or purposive self-mastery (poise) must be learned, sometimes as a novel, but always as a necessary, accomplishment on which depends much that is capable of bringing the animal back to harmony with the ordinary relationships of life. He must be taught a plain outline of motor facts and movement procedures. Not only should he be encouraged to perform the acts, but to accept much kindly compulsion. Not only does he need to achieve full power over the coarser movements but to perform them far more accurately than ever before. The process is a mental training, not a mere physical training. Unless the brain centers wake up, become alert to the new demands, and voluntariness shall reach a high degree of motor awareness, the physical clumsiness present will overwhelm confidence, and gross or massed energy will become commotion and thus bar proficiency.

Particularly true is this need for exactitude in movement where the essential injury involves the nerve centers (cortical or cornual) directly as in a paresis, or injury, or through long disuse. Next in gravity are conditions where there has been section or destruction of a nerve in continuity. The difficulties are greatest where destruction of a part has been suffered, as in amputation or after a severe crush.

In the interest of encouraging function during the process of conserving and elaborating impaired centers as well as structures, the same principle deserves fullest

It has been found that in case of recent amputation when the parts severed are early brought in contact with proper support, function is retained far superior to those cases which have been allowed to wait too long. See the work of Dr. de la Panne at the Ambulance de L'Océan, in Belgium.

consideration; for example: primary rest for corneal centers in poliomyelitis. The equation must be worked out how to secure the earliest stimulation permissible for the maimed motor centers, at the same time to avoid over stimulation or fatigue, or exhaustion. So also in such forms of paralysis as hemiplegia, or other varieties of central damage of which traumata offer such a variety. The enterprise has never yet seemed to interest the "scientific" clinician as it deserves. The late Dr. Weir Mitchell constantly emphasized the need for training the motor centers through the periphery as well as volitionally, especially in hemiplegia.

Another principle demands attention in traumata, especially in war wounds where the neuro-muscular mechanisms as a whole are compromised, and that is the element of shock, used in the sense of overwhelming perturbation or commotion of the psycho-energetic as well as the spinal and sympathetic centers. Here we have an aggregation or grouping of effects due to protracted fatigue, accumulations of depressing circumstances in which occur fear, confusion or commotioned impulses-to-do checked by doubts; the frantic push out and the pull back of bewildered voluntariness; added to excessive physical discomforts, exposure to cold, to wet, to loss of sleep, all of which contribute to exhaustion of centers. Absolute rest or poise is here the first essential, rest of the whole organism, also fixation of damaged parts.

When, as a dramatic culmination to all these influences, comes a trauma, especially when consciousness is either not lost or only temporarily suspended, there follows a state of special vulnerability of both body and mind (emotions); a failure of the reflex automatic defense mechanisms to come back to equilibrium. It is this power to bring back bodily and mental poise at the earliest moment which should be the aim of not only the physician but also of the patient.

Here we have a graphic sketch of deep significance of the origination of familiar but diversified disturbances, the effects of which are exhibited upon the musculature. Unless this myogenic element receives expert and consistent attention *per se* there will remain enough distress, or decrepitude, or both to obscure the issue.

The personality of the patient—you may say—is capable of achieving much poise through inciting courage, high spirit, fortitude, morale and the like. In some instances this may prove sufficient. More often much motor guidance is required or catastrophe results. As Richard Cabot says of "Christian Science," "you are abjured to leap before you look, scorning such benightedness as to look before you leap."

Motor re-education is constantly proving a reliable remedy in overcoming the effects of most disordered states and of many disease effects. The positive data is so convincing that we may assume the case proven. The utmost care must be taken in doubtful conditions to study the blood, temperature, and other reactions; also judgment should be used when to encourage activities and when to insist upon absolute rest. The physiology of the blood during and after exercise has been studied carefully.²

Briefly, the effects produced by muscular exertion of an active and continuous sort are almost invariably to cause an immediate increase in the number of red cor-

puscles in a unit of volume of blood together with a leucocytosis, and in sp. gr. proportionately with the red cells. This is followed after cessation by a dilution to subnormal sp. gr. lowering of the haemoglobin content and of the red cells. Schneider and Havens findings may be summarized as follows:

During muscular inaction a large mass of the blood is diverted to the splanchnic area, where it probably stagnates and gives up plasma as lymph. There is also throughout the remainder of the body, especially in the limbs, an accumulation of lymph. With the onset of muscular activity the carbon dioxide content of the blood rises. This carbon dioxide stimulates the central nervous centers which regulate the secretion of the suprarenal glands, and hence the output of epinephrin is increased. The epinephrin causes a constriction of the blood vessels of the splanchnic area, and this forces the stagnant corpuscles into the general circulation, thus occasioning the rise in specific gravity, in hemoglobin, in erythrocyte, and leukocyte content of the peripheral blood. Further, the contraction of the voluntary muscles accelerates the flow of lymph, throwing lymph rich in leukocytes into the blood. The increase in red corpuscles and hemoglobin makes it possible to supply more readily the greater demand for oxygen made by the active muscles. Shortly after the cessation of exercise, the carbon dioxide content of the blood falls below normal. As a result, the discharge of epinephrin becomes subnormal and the blood once more accumulates in the splanchnic area, so that there is a gradual return to the normal composition and even a temporary subnormal content of red corpuscles.

Observations corroborative of this view deserve mention here. Abdominal massage and pressure raise the content of hemoglobin and red corpuscles in the blood of the peripheral capillaries. A tightly drawn belt or pressure exerted upon the abdomen following exertion prevents—in large measure—the customary subsequent dilution of the blood, presumably by delaying the redistribution of the formed elements back into their splanchnic reservoir.

The ultimate decrease in hemoglobin and red cells is not due to an actual disintegration of the corpuscles, but rather to their stagnation in some of the capillaries.

Schneider and Havens appear to have furnished the first carefully obtained data respecting the deportment of the little understood platelets in exercise. They find there is a marked fall in the number per cubic millimeter of blood, shortly after cessation of muscular action of from 17 per cent to 30 per cent. Later there occurs a sort of over-production leading to a rapid increase.

The increased count of blood corpuscles (noted by John K. Mitchell, Jr., long ago) observed after massage probably has much in common with the phenomena just described. It is important from every standpoint to learn conclusively whether some of the procedures of so-called physiologic (better bio-kinetic) therapeutics bring about their blood changes by promoting new hemopoietic activities or merely by inducing a redistribution of the circulating fluids.

As to exercise, or "graduated labor" in so serious a condition as acute tuberculosis, while those who specialize in T.B. as a rule insist upon rest through long periods, there are others who maintain that graduated exertions are not only beneficial but essential to rapid progress. The final decision doubtless will rest on facts not yet adequately learned or presented. We may briefly

An ample equivalent of the belt is full tone in the abdominal parietes, hence the significance of developing the trunk muscles concerned, direct and collateral.

¹ As a young assistant of Dr. Mitchell I once met the man—William Penn of Arkansas—on whom he first demonstrated this principle successfully. (See also article by author: "Diagnostic Points for Reeducation of Neglected Pareses," Virginia Medical Monthly, January, 1920.)

² P. B. Hawk: "On the Morphological Changes in the Blood After Muscular Exercise," American Journal of Physiology, 1904, 10, 334. E. G. Schneider and L. C. Havens: "Changes in the Blood After Muscular Activity and During Training," Ibid, 1915, 36, 239. The older literature is referred to in these papers.

refer to the work of Oliver Bruce and A. G. Inman at the Brompton Hospital. These observers base their conviction on much experience fortified by exact studies of the blood under varying conditions. They regulate the amount and kind of exertion in accord with blood and temperature findings and their results seem most satisfactory.

Their main contention is that the opsonic index is raised in accord with definite progress and that this increases as the treatment proceeds till the index ceases to vary and remains above the norm under severe labors.

I have listened to earnest controversies on rest and activities between masters in this clinical domain (of tuberculosis) and the impression carried away is that the evidence stands in favor of suitable exertions as a means of auto-inoculating the patient with his own antibacterial products, but that the utmost judgment and vigilance must be used here to employ it. When in doubt—rest! also rest periods must be long; active periods short. The inference is plain that as further experience is accumulated the evidence which accrues is to the effect that this wholly biologic and rational measure (exercise) will find increasing favor.

Particularly is this likely to be the decision where the

subjects are not too old, too deteriorated or exhausted, as in those instances which arise in rejected recruits or among young soldiers or sailors. Of course the *graduation* in activities and rest (poise) must be wisely regulated.

As a graphic and convincing illustration of the force of this fundamental principle, is the work published (op cit) by the "Ambulance de L'Océan," Belgium, where Dr. La Panna has applied this principle to the restitution of stumps of amputated legs. From the earliest possible moment—the tenth or the fifteenth day—the stump is placed in contact with a "trial or temporary support" moulded to fit precisely every cut part. Efforts are encouraged to rest on this support and to walk. The object is to preserve all the centers, tactile, neuro-muscular and other elements, terminal neurons as well as the nutrition of the maimed parts all in normal correlation and adjustment. It succeeds beyond expectation. The patients walk so well it is found difficult to differentiate the absent from the present leg. They need no crutches from the start. Cinema films are cited as convincing.

(Concluded in October)

Should the Tonsils Be Removed in Singers?

HAROLD HAYS, M.D., F.A.C.S.,

New York

This has been a mooted question for some time, and the tendency has been for laryngologists to be more careful in suggesting operation on a class of patients who are rather temperamental and in whom a great deal of harm can be done if not physically, at least mentally, by having their throats enlarged so that the oral cavity and the resonating chamber is considerably changed.

Up to a few years ago, the author was always of the opinion that it was dangerous to remove tonsils in singers, mainly for the reason that the throat cavity is thus enlarged, that there is a change in the musculature of the throat, which makes it necessary, after the voice has been tuned to a certain pitch, to have the entire range of the voice changed. However, he changed his mind when a well-known singer was operated upon in Germany, having one tonsil removed, during which process the throat was considerably lacerated. The voice of the singer was not changed in any particular. When this patient arrived in America, it became necessary to remove the other tonsil because of a severe infection, and a tonsil measuring two inches in length by a half inch in diameter was removed without any particular difficulty and without any impairment to the voice. Shortly after that, the author operated upon another singer, the operation being done with the utmost care, with no change in the pillars of the fauces or the musculature of the throat. It was almost a year before this patient could sing a single note. And, for this reason, and because he had studied a number of similar cases, he came to the conclusion that the effect upon the voice from having the tonsils removed, was more a psychological one than a physical one. It is surprising to see how much mutilation of the throat, can be stood by the average person without causing any harm, either in vocalization or

in the general health. The uvula has been removed, the pillars of the fauces have been severely mutilated, adhesions have taken place between the posterior pillar and the pharyngeal wall in a number of instances and yet with all of these deformities, the voice frequently remains good. Such deformities have often occurred in singers, in whom one would consider that such mutilation would change the vocalization considerably. Within the past year a number of such cases were shown at the New York Academy of Medicine, in which the mutilation to the throat was so fearful that one wondered whether anybody, who had had any experience in removing tonsils, could possibly have operated upon these patients. All of these patients were singers who depended upon singing for a living, and in every one of these cases, the patient was able to sing as well after the operation as before, regardless of the deformity that had taken place. Considering that, in one instance where no mutilation had taken place, and where the throat was in excellent condition, the patient could not sing, and in the other instance of severe mutilation of the throat where the patient was able to sing, one can only come to the conclusion that the result upon the voice of removing tonsils, depends upon the individual psychological state of the patient.

Under no circumstances, would one wish to advise that the tonsils in singers be removed, indiscriminately, because a great deal of harm can be done mentally, if not otherwise; so one would always weigh the necessity for operation. If the patient simply has large tonsils, without having any physical reaction from them, there is greater danger in removing his tonsils simply because they happen to be enlarged or become infected once in a while, than in leaving them in situ. On the contrary, if such a patient is suffering from intermittent attacks of acute

articular rheumatism, or if there is any irregularity in the heart action, or if there is any other physical manifestation which may be attributed to tonsillar infection, those tonsils should be removed, regardless of whether there is any danger to the voice or not. In other words, one should consider what the effect will be upon the general physical condition of the patient. If the physical condition of the patient is going to be improved markedly by removing the tonsils, they should always be removed and the risk taken of some impairment to the voice; for in these cases, after the physical condition of the patient has improved, there is always the possibility that the voice will increase in volume, and perhaps in quality, after infection is eliminated from the throat and general system.

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TONSIL COAGULATION

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North Tonawanda, N. Y.

In the last issue of the *MEDICAL TIMES* I noticed an item "Electrocoagulation Method of Treating Diseased Tonsils," by Dr. Frank J. Novak, of Chicago. He no doubt has good reasons to condemn the method. The diversity of opinions as to the merits of this method are in proportion to the number of machines on the market. They are not producing a standard machine for the work, notwithstanding the claims of the makers.

Due to the pressure of time the physician is not able to look into the matter, but depends on the word of the salesman for his information. These men are honest in their convictions but they have never coagulated a tonsil nor had the responsibility of the patient later.

I have before me a photograph found in the catalogue of one of the largest houses in this country, showing a physician standing at the side of the patient with the electrode in the mouth, without any apparent effort to direct it. The uvula no doubt will be getting a nice burn. This technic is simply impossible and very misleading to the new man in the work. The electrode must be guided very carefully as to location on the tonsil and also to depth of penetration.

Dr. Novak is unfortunate in his machine and is getting "electric burns" and not coagulation. The failure of the machine may be due to many causes, the principal being: 1st—the voltage is too high, 2nd—the condenser leaks or is short some place, 3rd—the spark gap too small and heats too early, causing it to arc, 4th—the inductance transformer may not be suitable and not properly balanced with other parts of the machine, 5th—the spark gap may not be properly placed, 6th—the hook up may not be the proper one to get the highest frequency. Frequency is the key to success. This is different to that of an auto-condensation machine. To build a machine start with a $\frac{1}{2}$ to 1 kw. transformer, a plate glass condenser of proper dimensions, a spiral or pancake inductance transformer of ample size, two feet in diameter across the outer coil. This consists of a copper ribbon wound edgewise. A spark gap of heavy construction that will not heat and gives the best results when open is about $\frac{1}{60}$ of an inch. The one I use consists of two copper wheels about four inches in diameter, running very fast, which keeps it cool and consequently cannot arc—the curse of all high frequency machines. The smaller the electrode the better it will coagulate, so keep it very sharp. This machine will coagulate beautifully and at the same time it will be practically impossible to burn the patient.

One should be able to grasp the output terminals in the hands without feeling any static current. There is no sensation whatever. If one feels the current it is not suitable for tonsil work and that gives us another don't—don't use it.

After investigating the subject for some time and consulting the works of some Chicago physicians I had Mr. Frank V. King, an expert in the construction of high frequency machines, build a machine for tonsil work. Since then I have constructed another myself and these two have been in operation for the last fifteen months, giving wonderful satisfaction. I have no record of the number of patients treated, but I do know that the machine is used more than once each day.

I have tried all methods during sixteen years of throat surgery and I find coagulation the most satisfactory in the adult. I have treated children but in such cases one has to resort to a general anesthesia and coagulate all the tonsil at one time. There is no advantage over the snare. The latter method is probably better because of so much necrotic tissue in the mouth at one time.

In no case has there been any reaction; no pain at the time of treating; no after pain and no inconvenience at any time. There is no danger of bleeding either during or after the operation. In large tonsils I use an electrode with two points and in small tonsils and all end treatments a single point. The other pole is bound to the wrist. When physicians are able to purchase a good standard machine so the textbooks will be of some use, the method will become very popular.

I would advise anyone contemplating taking up the work to purchase a book on the subject. There are several written by Chicago physicians.

Some Don'ts

Don't use a machine on a patient until you have experimented on yourself for several weeks.

Don't try to treat a tonsil until you know just what current to use and how to obtain it.

Don't put the electrode in the mouth without carefully directing it.

Don't open the gap to get more than $\frac{1}{4}$ of an ampere.

Don't use a gap until you have inspected it and possibly cleaned it.

Don't touch the pillars or uvula.

Don't buy a lot of pretty apparatus but get a machine for one service only.

Don't try to use a heavy auto-condensation machine.

Don't get discouraged but experiment on yourself until thoroughly familiar with the work.

Fall in Use of Narcotics in the United States

"Of especial significance to medical practitioners was the statement issued by Federal Prohibition Commissioner Haynes, on May 21, as to the heavy fall in use of narcotic remedies under the Harrison Drug Act. The latest official statistics prove the effectiveness of national control, and also refute the charge so often made that drug addiction and the use of narcotic drugs are on the increase in the United States."

"Official figures on imports of narcotics and their distribution showed that sales by manufacturers for the fiscal year ended June 30, 1921, were sufficient for $1\frac{1}{2}$ grains of morphine per capita, while for the fiscal year they were reduced to $\frac{1}{4}$ of a grain, on a per capita basis. The figures, of course, were not inclusive of smuggled narcotics. The per capita consumption of cocaine for 1921 was given as one-third of a grain, while that for 1922 was but one-fourth of a grain."

"Although the Harrison Law was a moral, and not a revenue measure, it resulted, last year, in turning into the treasury more than \$500,000 in excess of appropriations for enforcement of the act. The revenue receipts for 1921 were \$1,170,000, and \$1,269,000 for 1922."

"Every ounce of opium or coca leaves imported into this country can be traced directly to the ultimate consumer."—(*N. Y. Medical Week*, June 9, 1923.)

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Citizens and Subjects

Mr. Henry Morgenthau, former Ambassador to Turkey, in making the opening address before the Institute of Politics at Williams College, declared that the vote of America was controlled by men and women with no more intelligence, as judged by moron tests, than boys and girls of twelve years. Voters of that grade, he said, were responsible for America's peculiar position in the eyes of the world because of the quality of the Senators and Representatives they elected. The mass are deeply interested only in the results of baseball games, prize fights and Presidential elections. They send some of their loudest members to represent us in the Senate and in the House, and retard us from realizing that we are men.

This very frank talk reveals the fact that intelligent publicists are beginning to take into more serious account the facts regarding the mentality of the masses.

As a matter of fact, however, the extraordinary men who framed our Constitution understood very well what they had to do in order to check and balance the influence of the masses. The cynical may insist that economic considerations and the protection of privileged groups influenced the form that our government took, but it is our own conviction that these early statesmen were really very wise and had no illusions about the distribution of brains in their day.

Why are things getting out of hand to-day? Largely because since the Colonial period America has been a breeding ground for such old stock as was degenerate and a dumping ground for the feeble-minded masses of Europe. The "statesmen" of to-day do not know how to meet the changed conditions. They cannot change

the form of government and they cannot change the people.

In the first place, our "statesmen," as pointed out by Mr. Morgenthau, represent a progressive deterioration. In the second place, we are moving altogether too slowly in the matter of preventing reroduction by certain members of degenerate human stock; indeed, in New York State the law permitting sterilization of the grossly unfit was declared unconstitutional by the courts in 1918 and repealed in 1920; prior to 1921 only about 3,000 individuals were subjected to eugenical sterilization in the United States, of which 42 were New York cases; even in the matter of birth control we are shamefully derelict. In the third place, fearfully stupid things are done to the masses, such as the formulation of the Volstead Act. What happened in Russia when vodka was banned meant nothing to the fanatics who framed this enforcement instrument. The Russian Revolution became inevitable when the imbecile Czar prohibited vodka. The Bolsheviks have had the sense to leave the peasant in undisturbed possession of his salmagunka, a kind of beer.

Woodrow Wilson, in the August *Atlantic Monthly*, remarks that the Russian Revolution was due to the systematic denial to the great body of Russians of the rights and privileges which all normal men desire and must have if they are to be contented and within reach of happiness. We should amend this by striking out the word normal. The moron ought to have his beer.

So long as we cannot or do not wish to change our form of government it is to be regretted that the saving common sense of men like Alfred Smith cannot be brought fully to bear upon such problems, and the humor of Henry Mencken. Even the Puritans ruled better in these respects, and were less harsh and fanatical in so far as they took advantage of the mellowing and balancing influence of alcohol so feelingly lauded the other day by the King's physician, Lord Dawson of Penn.

Chiropractic Imbecility

Dr. Samuel R. Meaker, writing in a recent issue of *Caveat*, points out, in refuting the absurd claims of chiropractic, that even in true spinal disease, characterized by real bony deformity, there is ordinarily no indication that the nerves are subjected to pressure; according to the chiropractic idea, he remarks, a patient with a hump-back or even a spinal curvature ought to be suffering simultaneously from all the ills to which flesh is heir.

The policy of *Caveat* is to have both sides of important issues presented, so a chiropractor argues for his system in parallel columns. In the course of his argument two amusing passages occur. In the first passage he remarks that the original intent of the medical laws throughout this country was good, having been intended for the protection of the people against quacks and charlatans who preyed upon the superstition or the ignorance of the public and obtained money without affording relief. In the second passage our naive chiropractor declares that life, liberty and the pursuit of happiness are inalienable rights of all men, guaranteed to every citizen of the United States; but, while certain regulations are necessary for the protection of the people against charlatans and quacks, these measures should not be used as a club to prevent one from obtaining his health in any manner which is most effective.

New Sources of Hospital Labor

As our civilization becomes more and more complex our hospital administrators must be ready to turn to account everything that makes possible a step ahead or

even a continued maintenance of what we have. The increasing costs of operation and the scarcity of certain kinds of labor help to make the problem acute.

It may be that our very dilemmas will compel solutions which while radical will be well advised.

One experiment, successful in so far as our observation goes, has been the employment as houseworkers, by general hospitals, of paroled mental patients, when their condition has become such as to warrant and make advisable such employment.

The old employment of short-term prisoners from the "Island" by metropolitan hospitals was a scandal in its day, particularly in the light of its superseding agency, the trained nurse. But we wonder whether or not long-term prisoners could be profitably employed in certain types of hospitals? Would the practical difficulties be too great, such as proper surveillance and ways and means of meeting political, industrial and "moral" opposition?

From a lay point of view the employment of paroled mental patients must seem more difficult than the utilization of prisoners, yet there has been a measure of success.

A highly enlightened civilization would certainly make more and better use of its charges, in their interest as well as the State's, than we seem to be doing.

It would seem that a beginning could be made in the State Hospitals, where conditions having to do with surveillance would naturally be more auspicious.

Perhaps in time we shall see new types of institutions arise upon the sites of the present cell-blocks, staffed by inmates trained by the State in the manner suggested.

Certainly a vast deal of potential labor is not being constructively utilized as it might be, labor in which all sorts of aptitudes are lying fallow. Nor is a new way of life being made practicable for men who are essentially like the rest of us.

What more logical than to afford malefactors an actual chance to make amends for their shortcomings through service, to commute sentences according to the quality of the service rendered, and to solve some of the economic and industrial problems of the State and taxpayers at the same time?

In the program laid down by the National Committee on Prisons and Prison Labor, economic and industrial considerations stand first. This program calls for a standardization of specifications for commodities needed by the departments of all States and the manufacture of those commodities by State Prison factories, State managed, and paying a proper pro-rated wage to the prison employee. This system is said to be developing in Massachusetts, Virginia, New York, New Jersey, and Ohio. What we have suggested as to new sources of hospital labor is really in line with this program.

We leave the matter with the practical penologist and administrator.

Environment

"If environment," says *The Freeman*, "were synonymous with nature, there would be no escape from all our ills; but as it is a composite formed of nature and the regulations enacted by man, it can be modified by changing these regulations. Instead of fashioning laws that interfere with the most intimate and subtle affairs of men and women in order to make the individuals fit the environment, the alternative might be tried of improving the environment and letting human nature alone."

But it is easy to see how those who would undertake the task of improving the environment might make a mess of things quite equal in iniquity to the present order. When O. Henry was sent down to Ashville in the hope that some fresh air and a change of environ-

ment might quicken his powers he found himself unable to create anything and ascribed his plight to the lack of a stuffy flat. What an O. Henry on an improvement commission might advocate and apply in the way of environment is a fearsome thought.

"The 'statesmen' who staged the war, for example, certainly succeeded in setting up an interesting environment."

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

The Newer Way

Sleep, pretty baby, nor fear any shock
To your dear little nerves, for the cradle won't rock!
Mother will guard you from dreadful alarms
But she never will gather you up in her arms
Nor hush your wee sob with a "bye baby, bye."
Your lungs will develop, dear child, if you cry.

*Rock-a-bye baby is very old stuff,
Physicians can hardly denounce it enough;
But you cannot be blamed if you get in a huff,
For, between you and me, they are treating you rough.*

The robin, an ignorant creature is he,
He cradles his little ones up in a tree
And at eve they are lulled to a blissful repose
By every soft, summery zephyr that blows,
While their father pours forth to the twilight his song.
But the doctors contend that the robin is wrong.

*Bad little robinkin rocking up there,
The health of the bird is the doctor's despair.
If you should grow lusty and strong after all
Down will come doctor and doctrine and all!*

Sleep, pretty baby, there's nothing to fear,
For just at the present the doctor's not near.
From under the cradle we've taken the block
And for the next hour you're going to rock,
As we did ourselves when a very small kid,
And we've lived a long time to be glad that we did!
(Exchange.)

Old Dr. Volstead

In May Judge Knox held, in the United States District Court here, that the provision of the Volstead act forbidding a physician to prescribe more than one pint of liquor for one patient within a period of ten days is void, a prohibition not within the terms of the Eighteenth Amendment, which prohibits intoxicating liquor for beverage purposes. The action was brought as a test case by Dr. Samuel W. Lambert in behalf of an association of distinguished physicians who believe in the therapeutic value of alcohol and the constitutional right of a licensed practitioner of medicine to follow his own judgment and discretion, without directions from the Government.

Judge Knox's opinion didn't deal with the provisions of the Willis-Campbell act, which went into effect in November, 1921, limiting the number of liquor prescription blanks, except in emergencies, to 100 every three months. Another Federal Judge, Bourquin of Montana, not only follows Judge Knox's decision as to the amount of liquor to be prescribed to a patient in ten days, but holds that the limitation of the number of prescriptions is void; "nothing but an arbitrary restriction upon the number of patients a physician shall treat in ordinary course of circumstances, or an unreasonable mandate to malpractice in respect to them." Judge Bourquin continues:

"The physician with unrestricted power to begin a course of treatment must have like power to finish it. Otherwise there may be dangers greater than involved by denial of any power, for the latter might be supplied by substitutes. These statutory provisions to restrain the judgment of physicians in the exercise of the power to prescribe alcohol, which deprive physicians and patients of liberty without due process of law within the meaning of the Fifth Amendment, are unconstitutional."

That is sound sense. May it be found good law; and if it isn't, the law should be changed. The friends of medical freedom should be helped, not hindered, by all judicious friends of prohibition. That had difficulties and foes enough without stirring up more by extensions of the plain purpose of the Eighteenth Amendment.

New York Times.

(Concluded from page 213)

Ford as an Industrialist

Ford's mental food has been mechanics—power.

Other men may like the trades, professions, or what-not.

All of us, though, are inclined to see the other fellow through the glass in our own eye.

So Ford sees contented labor in his large machine shops.

Men get good wages for racing with a mechanical pace setter.

If the hum-drum of setting a nut on a bolt becomes too nerve racking through its monotony, the workman may have a change—drive a tack in a certain part at a certain time.

The wheels keep turning; the Western Union is no better regulator of time.

Some investigators have told us that the majority of laborers would rather play second fiddle to some machine than act on their initiative and build with their own mind and hands.

If this be true it is fortunate, for we have reached the mechanical age; yet who can foretell what this will mean to future generations. Surely the herd instinct will be overdeveloped, and the masses unduly swayed by the few.

Henry Ford means well.

He looks after the health and welfare of his men and gives employment to many who are disabled.

His employees are like children who are watched and directed—encouraged to build homes and keep them homelike, to get a bank account and increase its balance.

He does almost as much as the army or navy in feeding, clothing, sheltering and controlling men; an added attack on their initiative. Ford does not see it in this light.

Some day the employees may awaken to the fact that they are slaves—a self-imposed slavery for financial security.

The Question

Suppose you have a large family and an intricate estate; stocks, bonds, mortgages, lands, leases, etc.

You know that it must pass from your management.

You have a friend who is a mechanic.

You have known him all your life.

He is honest, a skilled workman, well liked by his associates, kind and generous, and has devoted his life to his work.

You are very fond of him; his mistakes are those of the head rather than of the heart.

You would aid him, if he needed it, in any reasonable way.

Would you appoint him manager of your estate?

You would not; it would not be fair to any concerned.

Why?

Because he lacks experience in such matters.

Experience is history—records of the past.

History is the dissecting table—the post-mortem of nations, states and individuals.

Without history—experience—behavior is not understood and no deductions can be drawn—foresight is lost.

The Bible and the teachings of Christ would mean nothing.

Napoleon would be only a name; St. Helena a rock.

Yet Ford says: "History is bunk." (Allen L. Benson.)

It will not be long before the United States must choose a President. Besides the Volstead Act, and our other troubles, there are to be considered Great Britain and her colonies, Ireland and her new freedom, Germany and her debts, France and her Eiffel Tower (which would be higher), Turkey and her cigarettes, Japan and her "Picture Brides," Porto Rico and her governors, Persia and her lambs, the Philippines and their rainy season, Austria and her kronen, Italy and her Fascisti, Russia and her Bolshevism, Mexico and her oil fields, South America and her River of Doubt, and, and—

REMEMBER THE PEANUT MAN.

Professional Building.

(Concluded from page 214)

condition of her teeth suggested strongly focal infection. An x-ray study of the teeth was impossible. While under our observation there were repeated attacks of mild diarrhea.

In general the muscular system displayed an atonic state and this was particularly conspicuous in the muscles of the abdomen. There was slight tenderness over the appendiceal region. The knee jerks were diminished, other reflexes normal. No areas of altered sensations were appreciable. She often complained of aching of her hands and feet, but her mental condition was such that we were unable to determine from just what discomfort she suffered.

Laboratory Diagnosis

The urine gave a specific gravity 1020. A faint trace of albumin was present, and an occasional hyaline cast seen. The Wasserman reactions with both the blood and spinal fluid were negative and the colloidal gold test was also negative. Cell count of the spinal fluid gave three cells per cmm.

The red blood cells fluctuated within the normal limits and upon three occasions the leukocytes were found to be 7,800, 17,000 and 8,800 per cmm. (There was evidence of a slight infectious cold when 17,000 leukocytes were found). Conspicuous features in the differential blood counts were that the polynuclear cells were found upon three occasions to be 55-59 and 52 per cent. This decrease in the polynuclear elements seemed to be replaced entirely by the lymphocytes which were 39-34 and 46 per cent. Eosinophils and a few large mononuclear cells were also present. The hemoglobin was persistently below normal 72-76 and 78 per cent.

The United States Bureau of the Census reports that in 1921 the total number of deaths from all forms of tuberculosis in the United States Registration Area numbered 88,135 out of the grand total of 1,032,009 deaths from all causes, or that tuberculosis was responsible for 8.5 per cent. of the total 1921 mortality. Ten years ago, namely, in 1911, tuberculosis caused 11.2 per cent. of all death, or 94,205 out of a total of 839,284 deaths. The tuberculosis death rate in 1911 was 159 per 100,000 population, whereas in 1921 it was 99.

(Concluded from page 217)

lute freedom from the usual sequelae occurring after the administration of many hypnotics. A cracker or two can be advantageously added, to increase the psychic effect, and the impression of a nutritional and stimulating beverage, without the slightest suggestion of medication.

33 E. 60th St.

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(Concluded from page 219)

In the writer's practice "uvulectomy" is done as follows: After removing mucous from the surface of the uvula and surrounding parts by spraying with some suitable detergent, a four percent aqueous solution of cocaine hydrochloride, in cautious amounts, is repeatedly applied, first to the uvula anteriorly and posteriorly, then to the soft palate immediately above and the margins of the posterior pillars of the fauces. Firm pressure of the swab into the angles of junction between the posterior pillars and the uvula has been found to facilitate anaesthesia, which is usually complete in from five to eight minutes. During this preliminary the patient is permitted to gain some experience in manipulating the tongue depressor, this anticipation having proven distinctly advantageous. With the tongue held out of the way by the patient, the uvula is grasped with a pair of Noyes' alligator-jaw forceps near the level of its junction with the posterior pillars, and moderate traction made downward and slightly toward the operator. Severance is then effected with curved tonsil-scissors (points down) at a level that promises to leave an uninterrupted arch to the resulting margin of the soft palate. Retraction of the mucous membrane usually leaves, however, a slight protrusion of muscular tissue beyond the palatal arch. After the patient has had a few swallows of cold water this piece of tissue is drawn down and excised, and any other unevenness observed is similarly corrected.

The after-treatment involves no difficulties, and few patients experience any apparent need of it after the third or fourth day. Healing is usually complete within two weeks. Immediately after operation it is advisable to caution the patient against the added discomfort occasioned by food or drink that is hot, highly seasoned, acid or extremely sweet. The routine practice has been to prescribe "mentholated throat tablets with cocaine," to be dissolved on the tongue almost continuously for the first twenty-four or forty-eight hours. After that a gargle that is diluted with water, equal parts, and used every hour or two, is prescribed, as follows: Phenol, 10 minims; Glycerin, half an ounce; Alkalol, an ounce and a half; Dobell's Solution, sufficient to make eight ounces.

3600 Pacific Avenue.

Color blindness was called Daltonism because the earliest account of that optical peculiarity was given (1794) by John Dalton, English chemist and physicist, in his paper "Extraordinary Facts Relating to the Vision of Colours." Dalton himself labored under the inability to distinguish colors.—(*Med. Facts.*)

The Physician's Library

Diseases of the Rectum, Anus and Colon—By Samuel Goodwin Gant, M.D., New York. 3 Volumes; 1616 pages. Philadelphia: W. B. Saunders Company, 1923.

In presenting this series of three volumes, Dr. Gant has given the profession the clinical results of an unusually wide personal experience and has put physicians in his debt by so doing. Few men have had the opportunity for work that has come to this gifted author and his books will long remain as a standard in this field. To review so comprehensive a work in the small space permitted would be out of the question and the reviewer can only say that probably no author has given his readers more practical material that is to be found within these covers. Gant's style is lucid and simple and he has added to the vast amount of clinical material some of the most instructive pictures ever published in a scientific book. Any physician who practises coloproctology in any of its forms will want to avail himself of this unusually excellent series.

1922 Collected Papers of the Mayo Clinic, Rochester, Minn.—1394 pages. Philadelphia: W. B. Saunders Company, 1923.

In following up the collected papers of the Mayo Clinic from year to year it is interesting to note that the number of contributors has gradually increased until Volume XIV has 87 contributors. The papers cover a wide variety of subjects, as may be expected when one considers that these papers represent part of the output of this great teaching and treatment institution for a year. That they are the last word in their respective fields goes without saying and we are again grateful to Mrs. Mellish for bringing these papers together and preserving them in such excellent form.

The Heart in Modern Practice—By William Duncan Reid, M.D., Boston Dispensary. 352 pages. Philadelphia: J. B. Lippincott Co., 1923.

The increased interest in diseases of the heart, due in large measure to the number of instruments which enables the cardiologist to make an accurate diagnosis, has brought out considerable literature. This book, which is splendidly arranged and presented, takes up heart conditions from an etiological, functional and structural viewpoint and the subject is covered in a most effective manner.

Physiotherapy Technic—By C. N. Sampson, M.D., late of the Army and Public Health Service. 443 pages. St. Louis: C. V. Mosby Co., 1923.

The war has added considerably to interest in physiotherapy and much of the new work done in that field has been by former medical officers in the service. Dr. Sampson has had a very excellent opportunity to perfect himself in this line of work and the results of his endeavors are manifested in this book. He takes up, step by step, the ways and means whereby this field of application can be utilized in a medical way and he has produced a volume which should be an excellent teacher for those interested.

Practical Bacteriology, Blood Work and Animal Parasitology—By E. R. Stitt, M.D., Surgeon General, U. S. Navy. 7th Edition; 766 pages. Philadelphia: P. Blakiston's Son & Co., 1923.

This excellent compendium has gone through seven editions since it was first presented to the public, each one a little better than its predecessor. This volume is one hundred and thirty-two pages larger than the sixth edition and contains a vast amount of new matter. Not the least interesting is the bacteriology of water by Dr. George W. McCoy, of the Hygienic Laboratory, and Noguchi's modification of the Wasserman Reaction. This book will continue to be utilized by students and practitioners as a most useful textbook.

Nursery Guide—By Louis W. Sauer, M.D., Chicago. St. Louis: C. V. Mosby Co., 1923.

This book is intended for the use of mothers and nurses and very well fulfills its purpose.

Feeding, Diet and General Care of Children—By Albert J. Bell, M.D., University of Cincinnati. 276 pages. Philadelphia: F. A. Davis Co., 1923.

There are presented herein many of the most practical ideas which cannot but appeal to the mother and to others to whom the care of children's is committed. No attempt has been made at literary elegance but rather the author has looked to those points which would be distinctly at value to the ones most interested.

Legal Medicine and Toxicology—Edited by Drs. Frederick Peterson, Walter S. Haines, and Ralph W. Webster. Second edition; two volumes; 2268 pages. Philadelphia: W. B. Saunders Company, 1923.

The second edition of this textbook presents the work of Dr. Ralph W. Webster, of Chicago, as a co-editor. These volumes are prepared by forty-two different authors and they take up every medical-legal subject in which the physician can possibly be interested. Physicians are exhibiting more and more interest in legal medicine of late and are appreciating the necessity of a greater knowledge of this important subject. It is very easy to suggest, therefore, that our readers procure these volumes because there will be found therein from most authoritative sources all the information which a physician may desire to use in court work. The first volume devotes itself practically to legal medicine, while the second takes up toxicology.

Inflammation in Bones and Joints—By Leonard W. Ely, M.D., of Stanford University. 433 pages. Philadelphia: J. B. Lippincott Co., 1923.

Eight sections make up this volume. After the general consideration of the subject the sections are devoted to acute osteomyelitis and arthritis; chronic osteomyelitis; chronic arthritis; tuberculosis of special joints, and to arthritis of various types. These headings tell the story better than the reviewer can present it, and an examination of the volume attests to its worth.

The Tonsils—By Harry A. Barnes, M.D., of Harvard Medical School. 2nd Edition, 217 pages. St. Louis: C. V. Mosby Co., 1923.

This is a book which should prove of interest to physicians contemplating taking up laryngology and it has many features which would prove of interest to laryngologists themselves. It is well written and printed.

Cerebrospinal Fluid—By Abraham Levinson, M.D., of Northwestern University Medical School. 2nd Edition, 267 pages. St. Louis: C. V. Mosby Co., 1923.

This book was reviewed when the first edition appeared and the second edition contains sufficient new data and new pictures to warrant its re-purchase. Those who do lumbar puncture work in any of its forms will find the book of value.

International Clinics—Vol. 2; 23rd Series. Philadelphia: J. B. Lippincott Co., 1923.

The interesting feature of this volume is the matter devoted to the study of Insulin, one of the contributors of which is Dr. Banting, the discoverer of the product. This subject will make a distinct appeal to medical men. The remainder of the volume is devoted to medical diagnosis and treatment and to surgery and the contributions thereto are of real interest. As is his custom, Dr. Cattell has presented a very interesting lot of papers for the delectation of his readers.

Clinical Laboratory Methods—By Russell L. Haden, M.D., of the University of Kansas. 294 pages. St. Louis: C. V. Mosby Co., 1923.

Laboratory workers and students have in this book all the data necessary to successfully pursue the ordinary work of the laboratory. It is succinctly and carefully presented.

Medical State Board Questions and Answers—By R. Max Goepp, M.D., of Philadelphia Polyclinic. 5th Edition, 731 pages. Philadelphia: W. B. Saunders Company, 1923.

Those preparing for State Board examinations and physicians who desire to review subjects will be interested in the contents of this new edition. It offers every opportunity for intensive work.

Teeth, Health and Diet—By Kurt H. Thoma, M.D., Harvard University Dental School. 215 pages. New York: Century Co., 1923.

This book gives the man of the street an opportunity to reflect on the tremendous importance of the mouth and teeth and diet. If the reader will absorb even a modicum of the material contained in this book he will be the gainer and, if he could absorb it all, there would be little work left for dental surgeons to accomplish.

The Doctor's Rubaiyat—By H. Elliot Bates, M.D., The Dry Milk Co., 15 Park Row, New York, 1923.

This clever poem is the work of a man gifted in the presentation of pharmaceutical products to the physician. His work in that line has been well known, but that he was a poet had escaped the attention even of his friends. Those who read his wisdom will believe that we have an Omar Khayyam in our midst.

No, Not Dead; They Live—By Wilson G. Bailey, M.D. 254 pages. Camden, N. J.: I. F. Huntzinger Co., 1923.

Dr. Bailey looks into the future and this book is a presentation of his studies into the realms which have been looked into by spiritualists. It demonstrates a knowledge of the subject which cannot but enlighten and even fascinate the reader. Believers in religion will be interested and scoffers will find something to think about. Better than read a review, read the book.

Tonsillectomy—By Greenfield Sluder, M.D., Western University School of Medicine. 176 pages. St. Louis: C. V. Mosby Co., 1923.

Probably Sluder has done as much for tonsillectomy as any laryngologist in the country. His technic is set forth in these pages. Throat men regard his work as standard and all physicians will be interested in going over this well-presented subject.

Alcoholic Fermentation—By Arthur Harden, Ph.D., London University. 3rd Edition, 194 pages. London: Longmans Green & Co., 1923.

The lectures contained in this book were delivered in London University and the Royal Institution and the only changes made in the third edition are some additions to the text and a re-arrangement of the subject matter. In view of an increased interest in alcohol, biochemists will welcome this new edition of a very high-grade piece of work.

Physical Exercise for the Invalids and Convalescents—By Edward H. Ochener, M.D. 2nd Edition. St. Louis: C. V. Mosby Co., 1923.

A very useful book and of interest to all physicians and patients.

Spectacles and Eyeglasses—By R. J. Phillips, M.D., Philadelphia. 5th Edition. P. Blakiston's Son & Co., 1923.

This is an interesting little book on the methods of mounting and properly adjusting spectacles and eyeglasses and it is naturally of special interest to ophthalmologists.

Labyrinth and Equilibrium—By Samuel S. Maxwell, Ph.D., University of California. 163 pages. J. B. Lippincott Company, 1923.

This book presents an objective study of the equilibrium reactions of vertebrate animals and the mechanism through which these reactions are produced. The ears of fishes have proved to be in many ways the most favorable objects for these investigations. The author's experiments on the functions of the different portions of the labyrinth, especially of the otoliths, were possible only because of the large size and the accessibility of the structures concerned. For these reasons the contents of the book is devoted largely to the description of the experiments on the ears of selachians and the statement of conclusions which may be reached from these experiments.

Applied Psychology for Nurses—By Donald A. Laird, of Univ. of Wyoming. Philadelphia: J. B. Lippincott Company, 1923.

There is every reason why a nurse should understand psychology because a considerable part of nursing is based on the nurse's ability to handle the patient. This book tells her just how to do it and, as such, is a very valuable contribution to the nursing literature of the day.

Adventures in Endocrinology—By Henry R. Harrower, M.D., Glendale, Calif. The Harrower Laboratory, 1922.

The author sets forth in his own emphatic style the history of his adventures into the field of internal secretions. It is presented in a very snappy manner and sets forth in a most open-minded way the author's convictions. It makes very interesting reading to all those who wish to advise themselves as to endocrinology.

The Therapeutic and Dietetic Age

Under the above title there appears on our desk a bright and interesting journal which is the successor to the *American Medical Press*. The *Age* is under the editorship of Dr. Edward H. Marsh, Assistant Professor of Preventive Medicine at Long Island College Hospital and Assistant to the Health Commissioner of the State of New York.

The purpose of the *Age* is to present to its readers material on the treatment of disease with particular reference to dietetics. This field cannot in any way be said to be overrun. As a matter of fact, altogether too little attention is paid to this particular method of therapy.

We welcome the new publication because we believe there is an unusual opportunity for it and we trust that under the editorship of Dr. Marsh and the management of Mr. Harvey S. Knox—who already has made a place for himself in the business end of medical journalism, through his long connection with the *American Journal of Surgery* as business manager—the new journal will be an unqualified success.

(Concluded from page 220)

Other articles of diet, salt, sugar, vinegar, etc., etc., never caused any similar reaction. The amount of alcohol necessary to produce symptoms was exceedingly small. Larger amounts of alcohol usually showed a more marked reaction than smaller ones, although this was not always the case. The amount of charcoal taken was of greater importance in this respect than the amount of alcohol. Of especial importance, however, was the length of time during which the charcoal had been used previous to the ingestion of the alcohol. After one dose of charcoal immediately followed by alcohol, no reaction was ever seen. Usually three to seven days of charcoal administration were necessary for a maximum reaction. In some instances longer administration of the charcoal was followed by less pronounced symptoms. A remarkable fact was that the concentration of the alcohol ingested was practically wholly unimportant, only the total amount taken seeming to be of any consequence.

In addition to these experiments on myself I have prescribed animal charcoal to numerous patients, at the same time warning them about drinking alcoholic beverages. Some of the patients, however, did not follow directions and others forgot, and then each time the same symptoms resulted as in the first case. Individual differences, of course, occurred and can easily be explained by the varying stability of the vaso-motor system of the different patients.

Due to external circumstances I have not been able as yet to try out wood alcohol, ether, or similar substances as the necessary facilities for animal experimentation were lacking to me at the time. Nevertheless I want to call more general attention to this practically unknown action of the animal charcoal as a knowledge of its occurrence may, under similar circumstances, save some colleague from suspecting—as I did in the first case—the onset of a serious disease, or a possible paroxysmal tachycardia. It need not be emphasized that the described vaso-motor disturbances may also cause serious, or even fatal results in the presence of marked circulatory or pulmonary lesions.

As to the mechanism of production of these vaso-motor disturbances, I can offer no explanation. It is a difficult problem which remains for the physiological chemist to solve. It seems likely that some sort of colloidal reaction may be the responsible factor, in which case physical chemistry would represent the highest court of appeals.

In this connection I do, however, want to call attention to the fact that cyanamide (CNNH_2) and alcohol produce exactly the same symptoms as I have described. Here too no symptoms of any kind occur unless alcohol is ingested but even minute quantities of the latter immediately cause the typical reaction.¹

It was suggested at the time that perhaps the finely powdered charcoal which is produced in manufacturing cyanamide might be responsible for the vaso-motor disturbances. This, however, does not seem likely as the charcoal in question is wood charcoal with which I have never been able to produce any reaction whatsoever. Furthermore investigations of the cyanamide reaction during the last years, seem to show that the causative factor is neither the wood charcoal nor the actual cyanamide itself but rather a potentialized alcohol action due to the cyanamide. The action of various alcohols, of chloral hydrate, sodium bromide, and theobromin, can also be increased by cyanamide as shown by experi-

ments.² It does not seem unlikely, therefore, that the animal charcoal and alcohol reaction described is due to a similar cause. At the same time, even if this be true, the actual chemistry involved is still as much of a riddle as before.

616 Madison Avenue.

¹ E. Hesse—Zeitschr. f. d. ges. exp. Med., Vol. 25, No. 5 and 6, p. 321; also Vol. 26, No. 3-6, p. 337.

(Concluded from page 222)

B. Exogenous:

1. Alimentary

- a. Qualitative or quantitative deficiency of food
- b. Deficiency in caloric value
- c. Faulty preparation or administration of food
- d. Sudden change of food
- e. Prolonged nursing
- f. Proprietary infant foods
- g. Refusal of child to take food
- h. Avitaminosis

2. Infectious and other diseases

3. Faulty Hygiene

4. Heat

5. Maternal causes

- a. Constitutional—debility of mother from disease or strain
- b. Developmental—faulty development or disease of breasts or nipples, and poor glandular development of breasts
- c. Pregnancy

C. Polyogenous (or mixed causes):

Conclusions

The states of nutrition in childhood are divided into three stages: eutrophic, dystrophic, and atrophic. The first stage represents the normal nutritional condition, and the other two the grades of malnutrition.

Feeding in health and disease, prognosis, and treatment depend upon the nutritional status.

In judging the nutritional state of a child, length is equally as important as height. The circumferences of the head, chest and abdomen are important adjuncts.

The most common causes of hypotrophic nutritional conditions are errors in the food, and infections.

815 Park Avenue.

Correspondence

Shell Fish Not Responsible for Pres. Harding's Condition To the Editor of the MEDICAL TIMES:—

The assumption that the copper content of shell fish is responsible for President Harding's illness should not be taken seriously. Shell fish of the Pacific Coast water usually contains traces and even measurable amounts of copper, and this is true especially of California waters where shell fish abound. Late in the '70's I made analyses for a mining company, specifically for gold and incidentally for copper. I found both, but I have not heard that the company became rich on either.

Pacific Coast people have been consuming copper plated oysters and cray fish—they call the latter lobsters—for more than half a century. I have heard Eastern people express themselves in very unpretty language about the flavor of Pacific Coast shell fish, but I never heard of a case of copper poisoning attributable to them.

J. W. REDWAY.

Mount Vernon, N. Y.

Sneak Thieves Visit Physicians

To the Editor of THE MEDICAL TIMES:

Sneak thieves in the offices of physicians have again appeared. On July 20th I was deprived of a nickel-plated box engraved "Special" on the outside of the top and again on the inside of the bottom. It contained special Ureteral Catheters and their accessories, worth about \$150.00 to the urologist but nothing to the pawnbroker. I would appreciate it should any physician to whom

¹ Koelsch—Zentralblatt für Gewerbehygiene—May, 1916, pg 103; June, 1916, pg 113.

Koelsch—Deutsche Vrtljchr. für öffentl. Gesundheitspflege, Vol. 47, No. 4, pg 326.